

# Bachelor of Technology in Mechanical Engineering

## School of Mechanical Engineering

Programme Credit Structure		Credits									
<b>Foundation Core Courses</b>		54	BENG102P	Technical Report Writing	0	0	2	1			
Basic Sciences and Mathematics		24	BSTS101P	Quantitative Skills Practice I	0	0	3	1.5			
Engineering Sciences		15	BSTS102P	Quantitative Skills Practice II	0	0	3	1.5			
Humanities, Social Sciences and Management (HSM)		15	BSTS201P	Qualitative Skills Practice I	0	0	3	1.5			
<b>Discipline-linked Engineering Science Courses</b>		15	BSTS202P	Qualitative Skills Practice II	0	0	3	1.5			
<b>Discipline Core Courses</b>		49	BFLE200L	Foreign Language	2	0	0	2			
<b>Discipline Elective Courses</b>		12	BHSM200L	HSM Elective	3	0	0	3			
<b>Open Elective Courses</b>		12	<b>Discipline-linked Engineering Science Courses</b>				<b>15</b>				
<b>Project and Internship</b>		09	BMEE209L	Materials Science and Engineering	3	0	0	3			
<b>Total Graded Credit Requirement</b>		151	BMEE209P	Materials Science and Engineering Lab	0	0	2	1			
<b>Non-Graded Credit Requirement</b>		11	BMEE215L	Engineering Optimization	3	1	0	4			
<b>Basic Sciences and Mathematics</b>		<b>24</b>	BMEE330L	Control Systems	3	0	0	3			
		<b>L T P C</b>	BMEE330P	Microcontrollers and Interfacing Lab	0	0	2	1			
BPHY101L	Engineering Physics	3	0	0	3						
BPHY101P	Engineering Physics Lab	0	0	2	1						
BCHY101L	Engineering Chemistry	3	0	0	3						
BCHY101P	Engineering Chemistry Lab	0	0	2	1						
BMAT101L	Calculus	3	0	0	3						
BMAT101P	Calculus Lab	0	0	2	1						
BMAT102L	Differential Equations and Transforms	3	1	0	4						
BMAT201L	Complex Variables and Linear Algebra	3	1	0	4						
BMAT202L	Probability and Statistics	3	0	0	3						
BMAT202P	Probability and Statistics Lab	0	0	2	1						
<b>Engineering Sciences</b>		<b>15</b>	<b>Discipline Core Courses</b>				<b>49</b>				
BMEE102P	Engineering Design Visualisation Lab	0	0	4	2	BMEE202L	Mechanics of Solids	3	0	0	3
BEEE102L	Basic Electrical and Electronics Engineering	3	0	0	3	BMEE202P	Mechanics of Solids Lab	0	0	2	1
BEEE102P	Basic Electrical and Electronics Engineering Lab	0	0	2	1	BMEE203L	Engineering Thermodynamics	2	1	0	3
BMEE201L	Engineering Mechanics	2	1	0	3	BMEE204L	Fluid Mechanics and Machines	3	0	0	3
BCSE101E	Computer Programming: Python	1	0	4	3	BMEE204P	Fluid Mechanics and Machines Lab	0	0	2	1
BCSE103E	Computer Programming:Java	1	0	4	3	BMEE206P	Machine Drawing Lab	0	0	4	2
<b>Humanities, Social Sciences and Management</b>		<b>15</b>	BMEE207L	Kinematics and Dynamics of Machines	3	0	0	3			
BENG101N	Effective English Communication (NGC)	0	0	4	2	BMEE207P	Kinematics and Dynamics of Machines Lab	0	0	2	1
BENG101L	Technical English Communication	2	0	0	2	BMEE210L	Mechatronics and Measurement Systems	3	0	0	3
BENG101P	Technical English Communication Lab	0	0	2	1	BMEE210P	Mechatronics and Measurement Systems Lab	0	0	2	1
						BMEE301L	Design of Machine Elements	3	1	0	4
						BMEE302L	Metal Casting and Welding	3	0	0	3
						BMEE302P	Metal Casting and Welding Lab	0	0	2	1
						BMEE303L	Thermal Engineering Systems	3	0	0	3
						BMEE303P	Thermal Engineering Systems Lab	0	0	2	1
						BMEE304L	Metal Forming and Machining	3	0	0	3
						BMEE304P	Metal Forming and Machining Lab	0	0	2	1
						BMEE306L	Computer Aided Design and Finite Element Analysis	3	0	0	3
						BMEE306P	Computer Aided Design and Finite Element Analysis Lab	0	0	2	1

BMEE401L	Computer Integrated Manufacturing	3	0	0	3	BMEE411L	Society 5.0	3	0	0	3
BMEE401P	Computer Integrated Manufacturing Lab	0	0	2	1	BMEE412E	Manufacturing Systems Design	3	0	2	4
BMEE402L	Heat and Mass Transfer	3	0	0	3	BMEE413L	Design of Chassis Components	2	1	0	3
BMEE402P	Heat and Mass Transfer Lab	0	0	2	1	BMEE414L	Vehicle Body and Aerodynamics Engineering	3	0	0	3
<b>Discipline Elective Courses</b>						<b>12</b>					
BMEE205E	Renewable Energy Systems	2	0	2	3	BMEE415L	Electrical Machines, Drives and Power Systems	3	0	0	3
BMEE208L	Industrial Engineering	3	0	0	3	BMEE416L	Autonomous Vehicle Systems	3	0	0	3
BMEE212L	Quality Control and Improvement	3	0	0	3	BMEE417L	Energy Storage and Management for Electric Vehicles	3	0	0	3
BMEE213E	Automotive Vehicles	2	0	2	3	BMEE418L	Materials for Electric and Hybrid Electric Vehicles	3	0	0	3
BMEE214E	Automotive Electricals and Electronics	2	0	2	3	BMEE419L	Electric Vehicle Testing and Certification	3	0	0	3
BMAT206L	Numerical Analysis	3	0	0	3	BMEE391J	Technical Answers to Real Problems Project	3			
BMEE305L	Manufacturing Planning and Control	3	0	0	3	BMEE392J	Design Project	3			
BMEE307L	Product Design and Development	3	0	0	3	BMEE393J	Laboratory Project	3			
BMEE309L	Lean Manufacturing	3	0	0	3	BMEE394J	Product Development Project	3			
BMEE310L	Supply Chain Management	3	0	0	3	BMEE396J	Reading Course	3			
BMEE311L	Welding Engineering	3	0	0	3	BMEE397J	Special Project	3			
BMEE312L	Engineering Tribology	3	0	0	3	BMEE398J	Simulation Project	3			
BMEE313E	Non-destructive Testing	3	0	2	4	<b>Open Elective Courses</b>					
BMEE314E	Mechanical Vibrations and Acoustics	3	0	2	4	<b>12</b>					
BMEE315L	Micro-Electromechanical Systems	3	0	0	3	Engineering Disciplines   Projects   Sciences   Humanities   Social Sciences   Liberal Arts   Economics   Finance   Entrepreneurship   Management   Skills   Reading					
BMEE316E	Industrial Robotics	3	0	2	4	<b>Project and Internship</b>					
BMEE317L	Mechatronic Systems Design	3	0	0	3	<b>9</b>					
BMEE318E	Fluid Power Systems	3	0	2	4	BMEE399J	Summer Industrial Internship	1			
BMEE319E	Advanced Material Characterization Methods	3	0	2	4	BMEE497J	Project-I	3			
BMEE320L	Refrigeration and Air-conditioning	3	0	0	3	BMEE498J	Project-II / Internship	5			
BMEE321L	Composite Materials	3	0	0	3	BMEE499J	One Semester Internship	14			
BMEE322L	Engineering Failure Analysis	3	0	0	3	<b>Non-Graded Credit Requirement</b>					
BMEE323L	Gas Dynamics	3	0	0	3	<b>11</b>					
BMEE324E	Turbomachines	2	0	2	3	BMEE101N	Introduction to Engineering	1			
BMEE325L	Internal Combustion Engines	3	0	0	3	BSSC101N	Essence of Traditional Knowledge	2			
BMEE326L	Power Plant Engineering	3	0	0	3	BSSC102N	Indian Constitution	2			
BMEE327E	Vehicle Dynamics	2	0	2	3	BEXC100N	Extracurricular Activities	2			
BMEE328E	Hybrid and Electric Vehicles Technology	2	0	2	3	BCHY102N	Environmental Sciences	2			
BMEE329E	Noise, Vibration, and Harshness	2	0	2	3	BHUM101N	Ethics and Values	2			
BMEE403L	Design of Jigs, Fixtures and Press Tools	3	0	0	3	<b>Minor (18 – 20 credits)</b>					
BMEE404L	Design of Transmission Systems	2	1	0	3	Bachelor of Technology in Mechanical Engineering with Minor in:					
BMEE405L	Industrial Automation	3	0	0	3	Computer Science and Engineering					
BMEE406E	Advanced Manufacturing Process	3	0	2	4	Artificial Intelligence and Machine Learning					
BMEE408E	Additive Manufacturing	3	0	2	4	Data Science					
BMEE409E	Computational Fluid Dynamics	2	0	2	3	.					
BMEE410L	Industrial Revolution 4.0	3	0	0	3						

# Integrated Master of Science in Food Science and Technology

## School of Bio Sciences and Technology

	B.Sc.	B.Sc.(Hons)	B.Sc.(Research)	M.Sc.
<b>Foundation Core Courses</b>	51	56	56	56
<b>Discipline Core Courses</b>	46	68	65	71
<b>Discipline Elective Courses</b>	12	12	12	27
<b>Ability Enhancement Compulsory Courses</b>	09	09	09	09
<b>Skill Enhancement Elective Courses</b>	04	04	04	08
<b>Open Elective Courses</b>	00	06	00	12
<b>Project and Internship</b>	02	05	14	17
<b>Total Graded Credit Requirement</b>	124	160	160	200

Programme Credit Structure		Credits	Discipline Core Courses				71	
<b>Foundation Core Courses</b>		56	TFSI201L	Principles of Food Science	3	0	0	3
<b>Discipline Core Courses</b>		71	TFSI202L	Food Chemistry	3	0	0	3
<b>Discipline Elective Courses</b>		27	TFSI203L	Food Microbiology	3	0	0	3
<b>Ability Enhancement Compulsory Courses</b>		09	TFSI203P	Food Chemistry and Food Microbiology Lab	0	0	4	2
<b>Skill Enhancement Elective Courses</b>		08						
<b>Open Elective Courses</b>		12	TFSI204L	Physiology and Nutrition	3	0	0	3
<b>Project and Internship</b>		17	TFSI205L	Food Additives	3	0	0	3
<b>Total Graded Credit Requirement</b>		200	TFSI206L	Food Quality and Analysis	3	0	0	3
			TFSI207L	Food Preservation Technology	3	0	0	3
<b>Foundation Core Courses</b>		<b>56</b>	TFSI207P	Food Analysis and Preservation Lab	0	0	4	2
		<b>L T P C</b>	TFSI301L	Food Engineering	3	0	0	3
TCHY101L	Chemistry	3 0 0 3	TFSI302L	Food Packaging	3	0	0	3
TCHY101P	Chemistry Lab	0 0 2 1	TFSI302P	Food Engineering and Packaging Lab	0	0	4	2
TPHY101L	Physics	3 0 0 3						
TPHY101P	Physics Lab	0 0 2 1	TFSI303L	Milk and Milk Products Technology	3	0	0	3
TMAT101L	Mathematics	3 1 0 4						
TBIT101L	Biological Sciences	3 0 0 3	TFSI304L	Nutraceuticals and Functional Foods	3	0	0	3
TBIT102L	Bioethics and Biosafety	2 0 0 2						
TCSE101L	Computer Programming : C	2 0 0 2	TFSI305L	Food Toxicology and Safety	3	0	0	3
TCSE101P	Computer Programming : C Lab	0 0 2 1	TFSI305P	Food Toxicology and Safety Lab	0	0	4	2
TBIT103L	Cell Biology	3 0 0 3	TFSI306L	Animal Products Technology	3	0	0	3
TBIT104L	Molecular Biology	3 0 0 3	TFSI306P	Animal and Milk Products Lab	0	0	4	2
TBIT105P	Cell and Molecular Biology Lab	0 0 4 2	TFSI401L	Food Laws and Regulations	3	0	0	3
TBIT106L	Biochemistry	3 0 0 3	TFSI402L	Food Equipment Design and Automation	3	0	0	3
TBIT106P	Biochemistry Lab	0 0 4 2						
TBIT107L	Industrial Unit Operations	3 0 0 3	TFSI403L	Baking and Confectionary Technology	3	0	0	3
TBIT107P	Industrial Unit Operations Lab	0 0 2 1						
TMAT201L	Probability and Statistics	3 0 0 3	TFSI403P	Baking and Confectionary Lab	0	0	4	2
TMAT201P	Probability and Statistics Lab	0 0 2 1	TFSI404L	Food Process Technology	3	0	0	3
TCSE207L	Computer Programming: Python	2 0 0 2	TFSI405L	Production Technology of Spices and Plantation Crops	3	0	0	3
TCSE207P	Computer Programming: Python Lab	0 0 2 1						
TRES102L	Research Methodology	3 0 0 3	TFSI406L	Grain Science and Technology	3	0	0	3
TBIT208L	Industry Standards and Guidelines	3 0 0 3	TFSI406P	Grain, Spices and Plantation Products Lab	0	0	4	2
TSSC201L	Critical Thinking	2 0 0 2						
TSSC202L	Intra and Interpersonal Skills	2 0 0 2						
TFLE200L	Foreign Language	2 0 0 2						

<b>Discipline Elective Courses</b>				<b>27</b>	<b>Skill Enhancement Elective Courses</b>				<b>8</b>		
TFSI208L	Food Adulteration	3	0	0	3	TFSI311E	Value Added Food Products	1	0	2	2
TFSI307L	Fruit and Vegetable Processing Technology	3	0	0	3	TFSI312E	Mushroom Farming	1	0	2	2
TFSI308L	Nutrition and Dietetics	3	0	0	3	TFSI413E	Beekeeping and Honey Processing	1	0	2	2
TFSI309L	Industrial Enzymology	3	0	0	3	TFSI414E	Biofortification of Foods	1	0	2	2
TFSI310L	Beverage Processing Technology	3	0	0	3	TCSE206E	Computer Programming: Java	3	0	2	4
TFSI407L	Crop Production Concepts and Practices	3	0	0	3	<b>Open Elective Courses</b>				<b>12</b>	
TFSI408L	Food Fermentation and Synbiotic Technology	3	0	0	3	TMGT401L	Principles of Management	3	0	0	3
TFSI409L	Food Nanotechnology	3	0	0	3	TMGT402L	Marketing Management	3	0	0	3
TFSI410L	Food Forensics	3	0	0	3	TMGT403L	Human Resource Management	3	0	0	3
TFSI411L	Food Rheology	3	0	0	3	TMGT404L	Total Quality Management	3	0	0	3
TFSI412L	Technology of Fats and Oils	3	0	0	3	TMGT405L	Supply Chain Management	3	0	0	3
TFSI390J	Study Project				3	TMGT406L	Consumer Behaviour	3	0	0	3
TFSI391J	Technical Answers to Real Problems Project				3	TMGT407L	International Business	3	0	0	3
TFSI392J	Design Project				3	TMGT408L	Design Thinking for Innovation	3	0	0	3
TFSI393J	Laboratory Project				3	TMGT409L	Entrepreneurship	3	0	0	3
TFSI395J	Computer Project				3	TMGT410L	Finance and Accounting	3	0	0	3
TFSI397J	Special Project				3	<b>Project and Internship</b>				<b>17</b>	
<b>Ability Enhancement Compulsory Courses</b>					<b>9</b>	TFSI399J	Summer Industrial Internship (28 Days)				2
TENG101L	Effective English Communication	2	0	0	2	TFSI497J	Project				3
TENG102L	Technical English Communication	2	0	0	2	TFSI498J	Research Project I				4
TENG102P	Technical English Communication Lab	0	0	2	1	TFSI499J	Research Project II / Internship				8
TENG103P	Technical Report Writing	0	0	2	1						
TCHY140L	Environmental Studies	3	0	0	3						

BCHY102N	Environmental Sciences	L	T	P	C
		0	0	0	2
<b>Pre-requisite</b>	<b>NIL</b>	<b>Syllabus version</b>			
		<b>1.0</b>			
<b>Course Objectives:</b>					
The course is aimed at students to					
<ol style="list-style-type: none"> <li>1. Understand and appreciate the unity of life in all its forms and their implications of life style on the environment.</li> <li>2. Identify the different causes for environmental degradation.</li> <li>3. Analyze individual's contribution to environmental pollution.</li> <li>4. Evaluate the impact of pollution at the global/local level and find solutions for remediation.</li> </ol>					
<b>Course Outcomes</b>					
At the end of the course, the students will be able to:					
<ol style="list-style-type: none"> <li>1. Recognize the environmental issues in a problem-oriented, interdisciplinary perspective.</li> <li>2. Classify the key environmental issues, the science behind those problems and potential solutions.</li> <li>3. Demonstrate the significance of biodiversity and its preservation.</li> <li>4. Identify various environmental hazards.</li> <li>5. Design various methods for the conservation of resources.</li> <li>6. Formulate action plans for sustainable alternatives that incorporate science, humanity, and social aspects.</li> </ol>					
<b>Module: 1</b>	<b>Environment and Ecosystem</b>	<b>5 hours</b>			
Environment: definition; Earth–life support system. Ecosystem definition, components and types. Key environmental problems, their basic causes and sustainable solutions. Food chain, food web and their significance, Energy flow in ecosystem; Ecological succession-stages involved, primary and secondary succession - hydrarch, mesarch, xerarch.					
<b>Module: 2</b>	<b>Biodiversity</b>	<b>4 hours</b>			
Biodiversity-definition, levels and importance. Species: roles: types: extinct, endemic, endangered and rare species. Hot-spots –Significance, Mega-biodiversity. Threats to biodiversity due to natural and anthropogenic activities, Conservation methods. GM crops-advantages and disadvantages.					
<b>Module: 3</b>	<b>Sustaining Environmental Quality</b>	<b>4 hours</b>			
Environmental hazards: definition, types, causes and solutions: Biological (Malaria, COVID-19), Chemical (BPA, heavy metals), and Nuclear (Chernobyl); Air, water and soil quality management and conservation; Solid waste management methods.					
<b>Module: 4</b>	<b>Clean and Green Energy</b>	<b>5 hours</b>			
Renewable energy resources: Solar energy-thermal and photovoltaic; Hydroelectric energy. Wind energy, Ocean thermal energy; Geothermal energy; Energy from biomass; Hydrogen energy; Solar-hydrogen revolution. Electric and CNG vehicles.					
<b>Module: 5</b>	<b>Environmental Protection Policies</b>	<b>4 hours</b>			
Environmental Protection (EPA) objectives; Air Act, water Act, Forest conservation Act and Wild life protection Act. Environmental Impact Analysis: guidelines, core values. Impact assessment methodologies.					
<b>Module: 6</b>	<b>Sustainable development</b>	<b>4 hours</b>			
Effect of population-urban environmental problems; Population age structure; Sustainable human societies: tools in economics, sustainable development goals SDGs and promoting awareness. Women and child welfare, Women empowerment.					

<b>Module: 7</b>	<b>Global Climate Change</b>	<b>4 hours</b>
Global climate change and green-house effect. Kyoto Protocol-carbon credits, The Paris Agreement, carbon sequestration: definition, types and methodologies. Ozone layer depletion: causes and impacts. Mitigation of ozone layer depletion- Montreal Protocol. Role of Information Technology in environment.		
<b>Total Lecture hours:</b>		<b>30 hours</b>
<b>Assessment:</b> Seminars, Quiz, Case Studies, Final Assessment Test.		
<b>Text Books</b>		
1. G. Tyler Miller and Scott E. Spoolman (2016), Environmental Science, 15 <sup>th</sup> Edition, Cengagelearning. 2. Benny Joseph, (2012), Environmental Science and Engineering, 5 <sup>th</sup> Edition, Tata McGraw Hill Education Private Limited, New Delhi, India.		
<b>Reference Book(s)</b>		
1. David M. Hassenzahl, Mary Catherine Hager, Linda R. Berg (2011), Visualizing Environmental Science, 4 <sup>th</sup> Edition, John Wiley & Sons, USA. 2. Raj Kumar Singh, (2012), Environmental Studies, Tata McGraw Hill Education Private Limited, New Delhi, India. 3. George Tyler Miller, Jr. and Scott Spoolman (2012), Living in the Environment – Principles, Connections and Solutions, 17 <sup>th</sup> Edition, Brooks/Cole, USA.		
Recommended by Board of Studies	14-02-2022	
Approved by Academic Council	No. 65	Date 17-03-2022

TCHY140L	Environmental Studies		L	T	P	C
			3	0	0	3
<b>Pre-requisite</b>	<b>NIL</b>	<b>Syllabus version</b>				
		1.0				
<b>Course Objectives:</b>						
<ol style="list-style-type: none"> <li>To make students understand and appreciate the unity of life in all its forms and the implications of life style on the environment.</li> <li>To broaden the understanding of global climate changes and the importance of renewable sources of energy.</li> <li>To give students a basic understanding of the major causes of environmental degradation on the planet, with specific reference to Indian situation</li> <li>To inspire students to find ways in which they can contribute personally and professionally to prevent and rectify environmental problems.</li> </ol>						
<b>Course Outcomes:</b>						
Upon Completion of the course, the students will be able to						
<ol style="list-style-type: none"> <li>Students will recognize the environmental issues in a problem oriented interdisciplinary perspectives.</li> <li>Students will understand the key environmental issues, the science behind those problems and potential solutions.</li> <li>Students will demonstrate the significance of biodiversity and its preservation.</li> <li>Students will identify various environmental hazards.</li> <li>Students will design various methods for the conservation of resources.</li> <li>Students will formulate action plans for sustainable alternatives that incorporate science, humanity, and social aspects.</li> <li>Students will have foundational knowledge enabling them to make sound life decisions as well as enter a career in an environmental profession or higher education.</li> </ol>						
<b>Module:1</b>	<b>Environment and Natural Resources</b>	<b>7 hours</b>				
Definition, scope, importance; need for public awareness on natural resources Forest resources – use, exploitation, causes and consequences of deforestation. Water resources – use of surface and subsurface water; dams - effect of drought, water conflicts. Land resources - Land degradation, soil erosion and desertification. Indian Case studies. Food resources – Definition, world food problems, Traditional and modern agriculture and its impacts and remedies.						
<b>Module:2</b>	<b>Energy Resources</b>	<b>7 hours</b>				
Definition for renewable and non-renewable energy resources. Non-renewable energy resources - oil, Natural gas, Coal, Nuclear energy. Renewable energy - Solar energy, Hydroelectric power, Ocean thermal energy, Wind and geothermal energy. Biomass energy and Bio Gas.						
<b>Module:3</b>	<b>Ecosystem and Biodiversity</b>	<b>5 hours</b>				
Concept of ecosystem, Structure and functions of an ecosystem, Food chains, food webs. Energy flow in an ecosystem, ecological pyramids and ecological succession. Case studies: Bio magnification of DDT. Biodiversity-Bio-geographical classification of India, hotspots, values of biodiversity. Threats to biodiversity - Case study. Conservation of bio-diversity. GM Crops						
<b>Module:4</b>	<b>Environmental changes and Remediation</b>	<b>6 hours</b>				
Air, water, soil, Thermal Pollution: Causes, effects and control measures; Nuclear hazard. Solid waste Management- Causes, Effects and control measures. Floods, earthquakes, cyclones,						

tsunami and landslides, Case studies.			
<b>Module:5</b>	<b>Global Climatic Change and Mitigation</b>	<b>5 hours</b>	
Global climate change and greenhouse effect – Kyoto Protocol, Carbon sequestration, Acid rain, Ozone depletion problem – Montreal Protocol.			
<b>Module:6</b>	<b>Social Issues and the Environment</b>	<b>6 hours</b>	
Urban problems related to energy and sustainable development, Water conservation, Rain water harvesting, Wasteland Reclamation. Environment Protection Act - Prevention and control of Pollution of Air and Water. Wildlife protection and Forest Conservation Acts.			
<b>Module:7</b>	<b>Human Population and the Environment</b>	<b>7 hours</b>	
Population growth, variation among nations, population explosion, Family Welfare Programme, Environment, Women and Child Welfare, Human rights, HIV/AIDS, Role of information Technology on environment and human health. Discussion on current environmental issues / topics by an Industrial expert or faculty			
<b>Module:8</b>	<b>Contemporary Issues</b>	<b>2 hours</b>	
Lecture by Industry Experts			
<b>Total Lecture hours:</b>		<b>45 hours</b>	
Lecture by Industry Experts			
<b>Text Book(s)</b>			
1.	Anubha Kaushik and C.P. Kaushik, Environmental Science and Engineering, 2016, 5 <sup>th</sup> Edition, ISBN: 978-81-224-4013-3, New Age International.		
2.	G. Tyler Miller Jrand Scott E. Spoolman, Living in the Environment, 2012. 17 <sup>th</sup> Edition, ISBN-13: 978-0-538-73534-6, Brooks / Cole.		
<b>Reference Books</b>			
1.	Environmental Science and Engineering by Anjali Bagad, 2014, 1st Edition, ISBN-10: 9350997088, Technical Publications.		
2.	Introduction to Environmental Engineering by Masters, 2015, 3rd Edition,		
3.	Basic Environmental Sciences For Undergraduates by Dr.Tanu Allen, Dr.Richa K. Tyagi Dr.Sohini Singh, 2014, 1 <sup>st</sup> Edition, ISBN-10: 938375827, Vayu Education of India.		
<b>Mode of Evaluation:</b> Internal Assessment (CAT, Quizzes, Digital Assignments) & FAT			
Recommended by Board of Studies		28.06.2021	
Approved by Academic Council		No. 63	Date 23.09.2021



BHUM101N		Ethics and Values			
		L	T	P	C
		0	0	0	2
<b>Pre-requisite</b>	Nil	<b>Syllabus version</b>			
		1.0			
<b>Course Objectives:</b>					
<ol style="list-style-type: none"> <li>1. To understand and appreciate the ethical issues faced by an individual in profession, society and polity.</li> <li>2. To understand the negative health impacts of certain unhealthy behavior.</li> <li>3. To appreciate the need and importance of physical, emotional health and social health.</li> </ol>					
<b>Course Outcomes:</b>					
<ol style="list-style-type: none"> <li>1. Students will be able to:</li> <li>2. Follow sound morals and ethical values scrupulously to prove as good citizens.</li> <li>3. Understand various social problems and learn to act ethically.</li> <li>4. Understand the concept of addiction and how it will affect the physical and mental health.</li> <li>5. Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects.</li> <li>6. Identify the main typologies, characteristics, activities, actors and forms of cybercrime.</li> </ol>					
<b>Module:1</b>		<b>Being Good and Responsible</b>			
Gandhian values such as truth and non-violence – Comparative analysis on leaders of past and present – Society's interests versus self-interests - Personal Social Responsibility: Helping the needy, charity and serving the society.					
<b>Module:2</b>		<b>Social Issues 1</b>			
Harassment – Types - Prevention of harassment, Violence and Terrorism.					
<b>Module:3</b>		<b>Social Issues 2</b>			
Corruption: Ethical values, causes, impact, laws, prevention – Electoral malpractices; White collar crimes - Tax evasions – Unfair trade practices.					
<b>Module:4</b>		<b>Addiction and Health</b>			
Peer pressure - Alcoholism: Ethical values, causes, impact, laws, prevention – Ill effects of smoking - Prevention of Suicides; Sexual Health: Prevention and impact of pre-marital pregnancy and Sexually Transmitted Diseases.					
<b>Module:5</b>		<b>Drug Abuse</b>			
Abuse of different types of legal and illegal drugs: Ethical values, causes, impact, laws and prevention.					
<b>Module:6</b>		<b>Personal and Professional Ethics</b>			
Dishonesty - Stealing - Malpractices in Examinations – Plagiarism.					
<b>Module:7</b>		<b>Abuse of Technologies</b>			
Hacking and other cyber crimes, Addiction to mobile phone usage, Video games and Social networking websites.					
<b>Total Lecture Hours:</b>					<b>60 hours</b>
<b>Text Books :</b>					
1.	R R Gaur, R Asthana, G P Bagaria, "A Foundation Course in Human Values and Professional Ethics", 2019, 2nd Revised Edition, Excel Books, New Delhi.				
2.	Hartmann, N., "Moral Values" , 2017, United Kingdom: Taylor & Francis.				
<b>Reference Books :</b>					
1.	Rachels, James & Stuart Rachels, "The Elements of Moral Philosophy", 9th edition, 2019, New York: McGraw-Hill Education.				

2.	Blackburn, S. "Ethics: A Very Short Introduction", 2001, Oxford University Press.
3.	Dhaliwal, K.K , "Gandhian Philosophy of Ethics: A Study of Relationship between his Presupposition and Precepts", 2016, Writers Choice, New Delhi, India.
4	Ministry of Social Justice and Empowerment, "Magnitude of Substance Use in India", 2019, Government of India.
5.	Ministry of Home Affairs, "Accidental Deaths and Suicides in India", 2019, Government of India.
6.	Ministry of Home Affairs, "A Handbook for Adolescents/ Students on Cyber Safety", 2018, Government of India.
Mode of Evaluation: Poster making, Quiz and Term End - Quiz	
Recommended by Board of Studies	27-10-2021
Approved by Academic Council	No. 64      Date      16-12-2021