GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3152908
Semester – V
Subject Name: Professional Engineering Ethics

Type of course: Humanities and Social Science

Prerequisite: Basic Knowledge of Science and Engineering

Rationale: It is important to understand the moral values that ought to guide the Engineering profession, to resolve the moral issues in the profession, and to justify the moral judgment concerning the profession. It is also important to develop a set of beliefs, attitudes, and habits that engineers should display concerning morality to increase one's ability to deal effectively with moral complexity in engineering practice.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
2	0	0	2	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	HUMAN VALUES Morals and Ethics - Honesty - Integrity - Values - Work Ethic - Civic Virtue - Respect for Others - Living Peacefully - Caring and Sharing - Self-Confidence - Courage - Co-operation - Commitment - Empathy.	6
2	ENGINEERING ETHICS AND PROFESSIONALISM Scope of 'Engineering Ethics'- Variety of moral issues - Types of inquiry - Accepting and sharing responsibility - Ethical dilemmas - Moral autonomy - Kohlberg's and Gilligan's theory – Consensus and controversy - Profession and Professionalism - Models of Professional Roles - Right action theories - Senses of corporate responsibility - Codes of ethics: Importance - justification - limitation - Abuse.	6
3	ENGINEERING AS SOCIAL EXPERIMENTATION Engineering as experimentation - Engineers as responsible experimenters - Balanced outlook on law - Cautious optimism - Safety and risk - Assessing and reducing risk - Safe exits - The Challenger case study - Bhopal Gas Tragedy - The Three Mile Island and Chernobyl.	4
4	WORKPLACE RESPONSIBILITIES AND RIGHTS Fundamental Rights - Responsibilities and Duties of Indian Citizens - Teamwork - Ethical corporate climate - Collegiality and loyalty - Managing conflict - Respect for authority - Collective bargaining - Confidentiality - Conflicts of interest - Occupational crime - Professional rights - Employee rights.	6
5	GLOBAL ISSUES Multinational corporations: Technology transfer and appropriate technology - International	6

	rights - promoting morally just measures - Environmental ethics: Engineering, ecology - economics – Human and sentient centred - and bio and eco centric ethics - Computer ethics and internet - Engineers as managers - Consulting engineers - Engineers as expert witnesses and advisors - Moral leadership.	

Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	**20**	**30**	**10**	**10**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Mike W Martin and Roland Schinzinger, Ethics in Engineering, 4th edition, Tata McGraw Hill Publishing Company Pvt Ltd, New Delhi, 2014.
2. M Govindarajan, S Natarajan and V S Senthil Kumar, Engineering Ethics, PHI Learning Private Ltd, New Delhi, 2012.
3. R S Naagarazan, A text book on professional ethics and human values, New age international (P) limited, New Delhi,2006.
4. Charles D Fleddermann, Engineering Ethics, Pearson Education/ Prentice Hall of India, New Jersey, 2004.
5. Charles E Harris, Michael S Protchard and Michael J Rabins, Engineering Ethics – Concepts and Cases, Wadsworth Thompson Learning, United States, 2005.

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Apply the Value of ethics with sustained lifelong learning to strengthen autonomous professional decision experiments around the world and provide solution as a professional expert	25
CO-2	Apply the moral issues, ethical dilemmas and corporate professionalism through identification of suitable professional body	25
CO-3	Analyze the environment and lives of world community as a responsible engineer.	25
CO-4	Evaluate the duties and responsibilities of employee/ corporate.	25

List of Open Source Software/learning website: Any Search Engine, NPTEL, Swayam portal