

Bachelor of Technology (B. Tech.)

B. Tech. Semester I/II

Subject Name: Ethics for Engineers

Subject Code: BTAS10102

Type of course: Humanities and Social Science including Management

Prerequisite: Zeal to learn the subject.

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				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
2	0	0	2	60	25	15	0	0	100

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests) **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
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	15%
2.	Business Ethics: Principles of personal Ethics, Principles of Professional ethics, Distinction Between Values and Ethics, Roots of unethical Behaviour, Ethical Decision – Making, Ethical Dilemmas, Sources and Their resolutions: Sources of Ethical Behaviour, Code of Personal Ethics for Employees, How to Resolve an Ethical Problem, How to Resolve Ethical Dilemmas.	6	15%
3.	Engineering Ethics and Professionalism: scope of 'engineering ethics'- variety of moral issues - Ethical dilemmas - Kohlberg's	6	20%

Sr. No.	Topics	Teaching Hrs.	Module Weightage
	and Gilligan's theory – consensus and controversy.		
4.	Engineering as Social Experimentation: Engineering as experimentation- engineers as responsible experimenters- codes of ethics- industrial standards Case study: The Challenger case study-Bhopal gas tragedy	5	25%
5.	Workplace Safety, Responsibilities and Rights: Fundamental rights - responsibilities and duties of Indian citizens - safety and risk - assessing and reducing risk - safe exit, loyalty - managing conflict - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights.	7	25%

Suggested Specification Table of Marks as per Bloom's Taxonomy (Theory/Practical):

% Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	50	30	-	-	-

Legends: R: Remembrance, U: Understanding; A: Application, N: Analyze, E: Evaluate C: Create and above Levels.

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 Text Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	A text book on professional ethics and human values	R S Naagarazan	9788122423013 New age international (P) limited	2017	1st
2.	Engineering Ethics	M Govindarajan, S Natarajan and V S Senthil Kumar	9788120325784 PHI Learning Private Ltd	2013	2nd
3.	Business Ethics	AC Fernando	978-9353437442	2019	3rd

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
	: An Indian Perspective		Pearson Publication		
4.	Business Ethics	Ferrell, Fraedrich and Ferrell	9780357513361 Cengage Learning	2021	13th
5.	Ethics in Engineering	Mike W Martin and Roland Schinzinger	978-0070540736 Tata McGraw Hill	2017	3rd

Course Outcome:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Awareness of types of ethical challenges and dilemmas, confronting members of different range and professions. (business, media, police, law, medicine, research) <i>(R,U-Cognitive Level)</i>	25
CO-2	Identify and describe relevant theoretical concepts related to professional ethics in engineering. <i>(R,U,A-Cognitive Level)</i>	20
CO-3	Understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories. <i>(R,U-Cognitive Level)</i>	10
CO-4	Distinguish among morals, values, ethics, and the law and to explore how each of them impact engineering practices. <i>(R,U,A-Cognitive Level)</i>	10
CO-5	Evaluate the duties and responsibilities of employee/ corporate. <i>(R,U,A-Cognitive Level)</i>	25

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-1	-	-	-	-	-	2	1	3	1	1	-	2			
CO-2	-	-	-	-	-	2	-	3	2	-	-	2			
CO-3	-	-	2	-	-	3	1	3	2	1	-	3			
CO-4	-	-	3	-	-	3	2	3	1	2	2	3			

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-5	-	-	3	-	-	3	2	3	3	1	1	2			
Rationale	-	-	8	-	-	13	6	15	9	5	3	12			

Rationale:

Most of the CO's matching with PO to several extents. Engineering Students are professional who serves lifelong through his/her innovation. They must realise the importance 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 practices.

Major Equipment: NIL

List of Open Source/learning website:

- <https://nptel.ac.in/courses/109/106/109106117/>
 - Covers major aspects of syllabus.
- <https://nptel.ac.in/courses/104/101/104101090/>
 - Covers major topics of syllabus.

List of Open Software: NIL