



**NATIONAL INSTITUTE OF TECHNOLOGY,  
TIRUCHIRAPPALLI**

**DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING**

COURSE PLAN – PART I			
<b>Name of the programme and specialization</b>	<b>B. Tech in MME (4<sup>th</sup> Year)</b>		
<b>Course Title</b>	<b>Professional Ethics</b>		
<b>Course Code</b>	<b>HSIR 14</b>	<b>No. of Credits</b>	<b>3</b>
<b>Course Code of Pre-requisite subject(s)</b>	<b>NIL</b>		
<b>Session</b>	<b>July 2021</b>	<b>Section (if, applicable)</b>	<b>A &amp; B</b>
<b>Name of Faculty</b>	<b>Dr. Chandana Deka</b>	<b>Department</b>	<b>Humanities and Social Sciences</b>
<b>Official Email</b>	<b>chandana@nitt.edu</b>	<b>Telephone No.</b>	<b>+91 9085930543</b>
<b>Name of Course Coordinator(s) (if, applicable)</b>			
<b>Official E-mail</b>		<b>Telephone No.</b>	
<b>Course Type</b> (please tick appropriately)	<input checked="" type="checkbox"/> <b>Core course</b> <input type="checkbox"/> <b>Elective course</b>		
<b>Syllabus (approved in BoS)</b>			
<p>UNIT 1: Introduction to Ethics, Moral and Values Occupation-Profession-Professionalism-Concept of Ethics-need for Ethics in Engineering - impact of unethical conducts on society and professional - Importance of Moral &amp; Value in profession – core values, Hollow values and its impact - Work Ethics – Styles of Ethics -Service Learning, components, reflections, evaluation and its assessment–Civic Virtue - Respect for Others in Engineering Work Place– Living Peacefully – Caring &amp; Sharing in engineering – General Etiquette for student</p> <p>UNIT II: Ethical Theories and Engineering: Kohlberg’s theory – Gilligan’s theory- utilitarianism &amp; Cost Benefit analysis – Duty Ethics &amp; Right Ethics- Its Impact on Engineering Practices – Virtue Ethics &amp; Personal vs. Corporate Morality - - moral autonomy — Consensus and Controversy - Moral issues in Engineering – types of inquiry – moral dilemmas – Ethical Problem-Solving Techniques - Types of Issues in Engineering &amp; Ethical Problem Solving - line-drawing technique, flow charting method</p>			



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with examples & applications - conflict problem solving methods - Models of Professional Roles & Professionalism.

UNIT III: Engineering Projects and Expected Traits Engineering as experimentation – engineers as responsible experimenters – Codes of ethics - Research ethics– Industrial Standard – purpose, types and use - Balanced outlook on law – – Collegiality and loyalty – respect for authority in industry – collective bargaining – Confidentiality – conflicts of interest and conflicting interest

UNIT IV: Safety, Responsibilities and Rights Safety and risk – definition - subjective nature and depending factors- types of risks – types of safety in industry - Risk benefit analysis and reducing risk – Govt. Regulator’s approach to risks- the challenger case study – the three mile island and Chernobyl case studies & Bhopal UCC accident – causes, ethical and safety issues – Accidents & Engineer’s role - Designing for Safety - Threat of Nuclear Power – depletion of ozone, greenery effects – occupational crime – professional rights – employees’ rights – whistle-blowing – condition & types of whistle blowing - Confidentiality and Proprietary Information - Intellectual Property Rights (IPR)

UNIT V: Ethics in Present Scenario and Engineers Role Multinational corporations – Business ethics – Environmental ethics – computer ethics – Role in Technological Development – Ethics for Weapons development – engineers as managers – consulting engineers – engineers as expert witnesses and advisors – Leadership - sample code of conduct ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of Electronics and Telecommunication Engineers (IETE), India, etc.

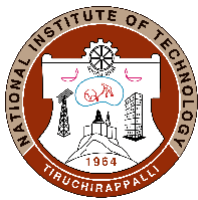
### **COURSE OBJECTIVES**

1. Identify the core values that shape the ethical behaviours of an Engineer
2. To create an awareness on Professional Ethics and Human Values
3. To appreciate the rights of others

### **MAPPING OF COs with Pos**

#### **Course Outcomes**

1. Understand the core values that shape the ethical behavior of an Engineer
2. Expose awareness on Professional Ethics and Human Values



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3. Know their role in technological development
4. To make students more ethically sensitive and make aware of global issues and think critically

**COURSE PLAN – PART II**

**COURSE OVERVIEW**

**Course is imparted by online lecturers by faculty with experience in industry as well as conducting teaching / training programs for engineering students & professionals.**

**Course duration is total 40 hours, including lectures on all 5 chapters of Professional Ethics, internal assessment tests and presentation by students on selected topics.**

**Each chapter will be covered in maximum 6 hours, excluding internal assessment by online tests. Course material in power point slides will indicate main points of each topic. At the end of complete course, students will be making group presentation on one of the topics as part of internal assessment.**

**Within 12 weeks all the chapters will be covered.**

**Students need to refer recommended text books and reference books for detail study and prepare for final examination.**

**COURSE TEACHING AND LEARNING ACTIVITIES**

( Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1 <sup>st</sup> Week	1. Introduction to Professional Ethics Course	Online using Microsoft Teams Meeting
2	2 <sup>nd</sup> Week	2. Ethical Theories and Engineering	MS Teams
3.	3 <sup>rd</sup> Week	3. Types of Issues in Engineering & Ethical Problem Solving	MS Teams
4.	4 <sup>th</sup> Week	4. Engineering Projects and Expected Traits	MS Teams
5	5 <sup>th</sup> Week	5. Confidentiality – conflicts of interest and conflicting interest	MS Teams



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6	6 <sup>th</sup> Week	6. Safety, Responsibilities and Rights	MS Teams
7	7 <sup>th</sup> Week	7. Engineer's role - Designing for Safety	MS Teams
8	8 <sup>th</sup> Week	8. occupational crime – professional rights – employees' rights	MS Teams
9	9 <sup>th</sup> Week	9. Ethics in Present Scenario and Engineers Role, Engineers as Managers	MS Teams
10	10 <sup>th</sup> Week	10. Role in Technological Development, Weapons Development	MS Teams
11	11 <sup>th</sup> Week	11. Sample code of conduct ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of Electronics and Telecommunication Engineers (IETE), India, etc.	MS Teams

**COURSE ASSESSMENT METHODS** (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Internal Assessment test on (a) Safety, Responsibility and Rights (b) Engineering as Social Experimentation	Week 6	2 Hours	20%
2	Internal Assessment test on (a) Human Values (b) Engineering Ethics (c) Global Issues	Week 8	2 Hours	20%
3	Internal Assessment group presentation / or individual project assignment	Week 10	10 minutes for each group of students	30%
CPA	Compensation Assessment*	Week 12	1 to 5 Hours	10% - 50% (10% for each chapter)
5	Final Assessment *	As per exam schedule	As per exam schedule	30%

**\*mandatory; refer to guidelines on page 4**



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<b>COURSE EXIT SURVEY</b> (mention the ways in which the feedback about the course shall be assessed)
At the end of the course, students will be submitting their online survey feedback on the course contents, time schedule, knowledge of faculty as well as course delivery methods
<b>COURSE POLICY</b> (including compensation assessment to be specified)
<b>As per general policy by Institute for all courses listed below:</b>
<b><u>ATTENDANCE POLICY</u></b> (A uniform attendance policy as specified below shall be followed) <ul style="list-style-type: none"><li>➤ At least 75% attendance in each course is mandatory.</li><li>➤ A maximum of 10% shall be allowed under On Duty (OD) category.</li><li>➤ Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.</li></ul>
<b><u>ACADEMIC DISHONESTY &amp; PLAGIARISM</u></b> <ul style="list-style-type: none"><li>➤ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.</li><li>➤ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.</li><li>➤ The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.</li><li>➤ The above policy against academic dishonesty shall be applicable for all the programmes.</li></ul>
<b>ADDITIONAL INFORMATION, IF ANY</b>
<b>Text Books:</b> <ol style="list-style-type: none"><li>1. Mika Martin and Roland Scinger, 'Ethics in Engineering', Pearson Education/Prentice Hall, New York 1996.</li><li>2. Govindarajan M., Natarajan S., Senthil Kumar V. S., 'Engineering Ethics' Prentice Hall of India, New Delhi, 2004.</li><li>3. Charles D. Fleddermann, 'Ethics in Engineering', Pearson Education/Prentice Hall, New Jersey, 2004 (Indian Reprint).</li><li>4. Charles E. Harris, Michael S. Protchard and Michael J. Rabins, 'Engineering Ethics –</li></ol>



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**Concept and Cases', Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available).**

**5. 'Concepts and Cases', Thompson Learning (2000).**

**6. John R. Boatright, 'Ethics and Conduct of Business', Pearson Education, New Delhi, 2003.**

**7. Edmund G. Seebauer and Robert L. Barry, 'Fundamentals of Ethics for Scientists and Engineers', Oxford University of Press, Oxford, 2001**

**FOR APPROVAL**

*Chandana Deka*

**Course Faculty: Dr. Chandana Deka**

*[Signature]*

**CC- Chairperson:**

*[Signature]*

**HOD: i/c**



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### Guidelines

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.