EC-112 PROFESSIONAL ETHICS AND HUMAN VALUES

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COURSE OBJECTIVES:

1. To provide essential complementarily between "VALUES" and "SKILLS" to ensure sustained happiness and prosperity.
2. To introduce Ethical concepts that are relevant to resolving Moral issues in Engineering and to impart reasoning and analytical skills needed to apply ethical concepts to Engineering decisions.
3. To facilitate the development of a Holistic perspective towards life, profession and happiness, based on a correct understanding of the Human reality.
4. To understand the need for lifelong learning and have the knowledge and skills that prepare them to identify the moral issues involved in engineering areas
5. To provide an understanding of the interface between Social, Technological and Natural environments.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. Demonstrate the principles of work ethics, stress management, moral autonomy, social responsibility, safety and risk, professional rights.
2. Analyze the problems of moral dilemmas, whistle blowing, and conflicts of interest.
3. Develop solutions for various moral dilemmas based on moral dilemmas, ethical theories and engineering ethics.
4. Demonstrate the importance of Engineering as experimentation, intellectual property rights, and various codes of ethics like ASME, ASCE, IEEE and IETE.
5. Apply ethical principles and to follow the norms of engineering practice to solve the various ethical issues.

UNIT I **(10)**

Morals, Values and Ethics - Self-Confidence - Character - Valuing Time - Courage - Honesty - Caring - Sharing-Self respect - Respect for Others - Spirituality - Living Peacefully.Integrity- Commitment - Empathy - Work Ethics - Service Learning - Stress management - Civic Virtue - Co-operation.

UNIT II **(10)**

Scope and aims of Engineering Ethics - Senses of 'Engineering Ethics' - Variety of Moral Issues - Types of Inquiry - Engineering Ethics and Philosophy.

Moral Dilemmas - Moral Autonomy - Kohlberg's theory - Gilligan's theory - Criteria for a profession - Multiple Motives - Models of Professional Roles.

UNIT III **(10)**

Moral reasoning and Ethical Theories - Virtue Ethics - Utilitarianism-Duty ethics - Right ethics-Self interest, Customs and Religion - Uses of Ethical Theories-Testing of Ethical Theories.

Engineering as experimentation - Similarities to Standard Experiments - Contrasts with Standard Experiments - Engineers as Responsible Experimenters - A Balanced Outlook on Law - Problems with Law in engineering - The Challenger Case Study.

UNIT IV **(10)**

Safety and Risk - Assessment of safety and risk - Risk benefit analysis and reducing risk - Testing for safety The Three Mile Island and Chernobyl case studies and safe exit.

Collegiality and loyalty - Respect for authority - Collective bargaining - Confidentiality - Conflicts of interest - Occupational crime - Intellectual property rights (IPR) - Discrimination.

UNIT V **(10)**

Professional rights - Employee rights - Whistle blowing - discrimination - Multinational corporations - Environmental ethics - Computer ethics - Weapons development.

Engineers as managers - Consulting engineers - Engineers as expert witnesses and advisors - Moral leadership - codes of ethics - role and limitations of codes - Sample code of ethics like ASME, ASCE, IEEE, Institution of Engineers (IE), India Indian Institute of Materials Management, Institution of electronic and telecommunication engineers (IETE), India, etc.

LEARNING RESOURCES:

TEXT BOOK(s):

1. Mkie Martin and Roland Schinzinger, Ethics in Engineering, McGraw - Hill, New Jersey, 2004 (Indian Reprint)
2. Govindarajan M, Natarajan S, Senthil Kumar V.S - Engineering Ethics, Prentice Hall of India, New Delhi, 2004.

REFERENCE BOOK(s):

1. Charles D. Fleddermann - Engineering Ethics, Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint).
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, Engineering Ethics - Concepts and Cases, Wadsworth Thompson Learning, United States, 2000 (Indian Reprint).

WEB RESOURCES:

1. http://nptel.ac.in/courses/109104068
2. http://nptel.ac.in/courses/109104030