EASWARI ENGINEERING COLLEGE

Department of Information Technology

LESSON PLAN

Subject code : GE2025

Subject Name : Professional Ethics in Engineering

Faculty Name : G. Ramakrishnan

Degree/Branch : B.Tech/IT

Year/Sem : IV/ VIII

T**otal No.of hrs given in syllabus**: 45

Lecture : 3

Tutorial : 0

Practical : 0

Grand Total : 45Hrs

OBJECTIVE **OF COURSE :**

The course will develop a framework on which professional and ethical issues can be analyzed, and build up an awareness of various views of ethical issues as well as professionals ethical rights and responsibilities.

OUTCOME OF COURSE :

Upon successfully completing this course, students will be able to

1. Understand the importance of Professional ideals and virtues and ethical theories.
2. Apply the content of the code of ethics and learn the consequences of safety and risk.
3. Understand the responsibility and rights of Engineering professionals.
4. Explore issues related to global contexts with respect to engineering practice.

PREREQUISTE : NIL

Sl.No	Topic	No. of Periods	Reference Books	Page No
UNIT I – Engineering Ethics				

Sl.No	Topic	No. of Periods	Reference Books	Page No
UNIT I – Engineering Ethics				
Objective : To create awareness on Engineering Ethics and learning ethical theories.				
1	Introduction to Engineering Ethics	1	T1	01-03
2	Senses of Engineering Ethics & Variety of moral issues	1	T1	03-09
3	Types of inquiry, Moral dilemmas & Moral Autonomy	1	T1	09-18
4	Kohlberg's theory, Gilligan's theory	2	T1	18-21
5	Consensus and Controversy	1	T1	22-23
6	Professions and Professionalism	1	T1	24-33
7	Professional Ideals and Virtues	1	T1	40-49
8	Uses of Ethical Theories	1	T1	70-78
UNIT II - Engineering as Social Experimentation.				
Objective : To impart knowledge about engineering as social experimentation.				
9	Engineering as experimentation	1	T1	80-89
10	Engineers as responsible experimenters	1	T1	89-94
11	Research Ethics	1	Hand outs	
12	Codes of Ethics	1	T1	105-111
13	Industrial Standards	1	T1	117-118
14	Balanced outlook on Law	2	T1	113-121
15	The Challenger Case Study	2	T1	96-104

	UNIT III- Engineer's Responsibility for Safety			
	Objective : To impart knowledge about engineer's responsibilities and training on Risk & Safety.			
16	Safety and Risk	1	T1	128-140
17	Assessment of Safety and Risk	2	T1	141-153
18	Risk benefit analysis	2	T1	153-160
19	Reducing risk	1	T1	160-167
20	The Government Regulator's Approach to Risk	1	T2	161-163
21	Chernobyl Case study	1	T1	167-185
22	Bhopal Case study	1	Hand outs	
	UNIT IV- Responsibilities and Rights			
	Objective : To impart knowledge about engineer's responsibilities and rights			
23	Collegiality and loyalty	1	T1	188-196
24	Respect for authority	1	T1	196-202
25	Collective bargaining	1	T1	202-208
26	Confidentiality	1	T1	208-215
27	Conflicts of interest, Occupational crime	1	T1	216-235
28	Professional Rights	1	T1	236-246
29	Employee Rights	1	T1	264-273
30	Intellectual Property Rights (IPR)	1	T2	128-134
31	Discrimination	1	T1	273-289

	UNIT V- Global Issues			
	Objective : To impart training on safety, responsibilities, rights and other global issues.			
32	Multinational Corporations	1	T1	290-303
33	Business ethics	1	Hand outs	
34	Environmental ethics	1	T1	304-319
35	Computer ethics	1	T1	319-332
36	Role in Technological Development,Weapons development	1	T1	332-348
37	Engineers as managers, consulting engineers	1	T1	349-367
38	Engineers as expert witness and advisors	1	T1	367-375
39	Honesty, Moral leadership	1	T1	375-383
40	Sample code of ethics	1	T1	397-417
	Total Periods	**45**		

ASSIGNMENT TOPICS

SL.NO	TOPICS	SUBMISSION DUE
1	Moral dilEmma	02/02/2015
2	The Ford Pinto Case study	02/03/2015
3	Environmental ethics	31/03/2015

CONTENT BEYOND SYLLABUS

SL.NO	ADDITIONAL TOPICS
1	Unethical Practices used in Insurance Industry

Text Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, New York, 2005.
2. Charles E Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Thompson Learning, 2000.

References:

1. Charles D Fleddermann, "Engineering Ethics", Prentice Hall, New Mexico,1999.
2. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, 2003
3. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, 2001.
4. Prof. (Col) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Perspective", Biztantra, New Delhi, 2004.
5. David Ermann and Michele S Shauf, "Computers, Ethics and Society", Oxford University Press, (2003)

Prepared By   **Approved By**

G. Ramakrishnan   HOD/IT

PROGRAMME EDUCATIONAL OUTCOMES

1. Graduates will be proficient in utilizing the fundamental knowledge of basic sciences and mathematics to the applications relevant to various streams of Engineering and Technology.

2. Graduates will possess core competencies necessary for application of knowledge of computers and telecommunications equipment to store, retrieve, transmit, manipulate and analyze data in the context of business enterprise.

3. Graduates will be capable of thinking logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and design optimal solutions.

4. Graduates will be able to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.

5. Graduates will gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.

6. Graduates will be aware of professional ethics of the software industry and equip themselves with communication skills essential for working in community.

PROGRAMME OUTCOMES

(a) Ability to apply knowledge of computing and mathematics appropriate to Information Technology

(b) Ability to analyze a problem, and identify computing requirements appropriate to its solution

(c) Ability to design, implement, and evaluate a system, process, component, or program to meet specific requirements

(d) Ability to interpret and synthesis data to provide valid conclusions

(e) Ability to function effectively as a team member to achieve a common goal

(f) Ability to understand professional, ethical and social issues and responsibilities

(g) Ability to communicate effectively with a diverse groups

(h) Ability to analyze the local and global impact of Information Technology on society

(i) Ability to recognize and engage in continuing professional development and life long learning

(j) Ability to use current techniques, skills, and tools necessary to accomplish projects related to Information Technology.

(k) Ability to understand the impact of the professional engineering solutions in societal and environmental contexts for sustainable development.

(l) Ability to understand engineering and management principles to manage projects in multidisciplinary environment.

MAPPING OF COURSE OUTCOMES WITH PEO's & PO's-   PROFESSIONAL ETHICS IN ENGINEERING (GE2025)

Units	Course outcomes	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PO_a	PO_b	PO_c	PO_d	PO_e	PO_f	PO_g	PO_h	PO_i	PO_j	PO_k	PO_l
Engineering Ethics	Understand basic knowledge about engineering Ethics, Variety of moral issues and dilemmas, and thoeries about right action.					M	S						S						
Engineering as Social Experimentation	Understand Engineers as responsible Experimenters and Codes of Ethics						S						S						
Engineer's Responsibility for Safety	Exposure to Safety and Risk. Apply variuos concepts used in assessment of safety and risk						S						S				W		
Responsibilities and Rights	Understand the responsibiliy and rights of Engineers						S					M							
Global Issues	Explore issues related to global contexts with respect to engineering practice and different roles played by Engineers				M		S								S			S	

S	STRONG
M	MEDIUM
W	WEAK