



The University of Jordan
School of Engineering
Electrical Engineering Department
2nd Semester – A.Y. 2022/2023

Course: Engineering Ethics – 0943401 (1 Cr. – Required Course)

Instructor: Prof. Othman Alsmadi

Office: E319, Telephone: 06/5355000, Ext 22855, Email: othmanmk@ju.edu.jo

Office Hours: Will be posted soon

Course website: <http://elearning.ju.edu.jo/>

Catalog description: Moral frameworks. Professionalism. Codes of ethics. Safety/risk. Workplace ethics. Honesty. Environmental, societal and global impact of engineering discipline. Effects of technological changes on modern society. Volunteerism/humanitarian engineering. Social justice. Engineering ethics via theoretical and/or case-study approach with special focus on cases from electrical engineering

Prerequisites by course: 0903361 Electronics II (pre-requisite)

Prerequisites by topic: Students are assumed to have a background in the following topics:
• General understanding of basic electrical engineering concepts.

Textbook: **Engineering ethics: concepts and cases**, 6th ed. by Charles E. Harris; Michael S. Pritchard; Michael J. Rabins; Ray James; Elaine Englehardt, 2019.

References:

1. Global engineering ethics, Heinz C. Luegenbiehl; Rockwell F. Clancy, 2017.
2. Ethics in Engineering Practice and Research, 6th ed. by Caroline Whitbeck, 2011.
3. Exploring Engineering Ethics: A Practical, Philosophical Guide to the Npse Code, Heidi T. Furey, Scott Hill, Sujata Kumari Bhatia, 2021.
4. Engineering ethics, 3rd ed. by Charles B. Fleddermann, 2008.
5. Engineering Ethics: Real World Case Studies, Steve Starrett; Amy Lara; Carlos Bertha, 2017.
6. Engineering Ethics, Deborah G. Johnson, 2020.
7. Engineering Ethics, Govindarajan Madabusi, 2004.

Schedule: 16 Weeks, 16 lectures (50 minutes each) plus exams.

Course goals: The overall objective is to introduce the student to the basic principles of engineering ethics.

Course learning outcomes (CLO) and relation to ABET student outcomes (SO):

Upon successful completion of this course, a student should be able to:

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| 1. Recognize ethical responsibilities of engineers. | [4] |
| 2. Describe in outline an ethical framework for engineering. | [2] |
| 3. Identify ethical issues related to an engineering situation. | [2] |
| 4. Suggest ways to deal with ethical issues in engineering. | [6] |

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| 5. | Understand and discuss ethical dilemmas in engineering and Justify different ethical stances. | [4] |
| 6. | Reach an ethically justified or morally reasoned practical solution to an ethical problem with an appropriate plan of action. | [6] |
| 7. | Define and discuss common ethical theories and apply them to societal and engineering problems. | [7] |

Course topics:

	Hrs
1. Engineering Ethics: Morals, Ethics, skills for ethical reasoning, Moral Issues, Moral Dilemmas, Moral Autonomy, Skills for Improving Moral Autonomy.	2
2. Professions and Professionalism: Profession, Professionals, Models of Professional Engineers, Professionalism, Professional Ideals and Virtues, Public-spirited Virtues, Proficiency Virtues, Teamwork Virtues, Self-governance Virtues, Problems Linked to Professionalism.	2
3. Codes of Ethics: Codes Roles, Advantages of Codes of Ethics, IEEE Code of Ethics, ABET Code of Ethics.	1
4. Responsibility for Safety: Safety, Risk, Acceptability of Risk.	1
5. Workplace Ethics: Loyalty, Collegiality, Respect for Authority, Confidentiality, Intellectual Property, Types of information, Changing jobs, Management Policies, Justification, Conflicts of Interest, Dilemma, Gifts and bribes, Interest in other companies, Insider information, Engineers as Managers, Consulting Engineers, Engineers as Advisors.	2
6. Environmental, Societal, and Global Ethics: Environmental Ethics, e-waste Disposal, Examples of Environmental issues, Social Experimentation, Engineers as Experimenters, Responsibility in Experimentation, Conscientiousness, Informed Consent, Accountability, Global Issues, Multinational Companies, Weapons Development.	2
7. Technology Ethics: Computers Ethics, Role of Computers in Technological Development, Privacy Factors, Plagiarism .	1
8. Voluntarism/Humanitarian Engineering: Voluntarism and Control, Magnitude and Proximity, Effective information on Risk assessment, Risk Analysis, Risk Benefit Analysis, Risk Reduction, Risk at Government's Approach.	1
9. Engineering Ethics and Social Justice: Social justice criteria.	1
10. Ethical Theories: Golden Mean/Virtue ethics, Rights-based Ethical Theory, Duty-based Ethical Theory, Utilitarian Ethics, Formulation of Ethical Theories, Case Studies.	1
11. Student Rules and Regulations at The University of Jordan: Student Code of Conduct, Student Discipline Regulation.	2

Course Policies/ Attendance is required and highly encouraged. To that end, attendance will be taken every lecture. Eating and drinking are not allowed during class, and cell phones must be set to silent mode. All exams (including the final exam) should be considered cumulative. Exams are closed book. No scratch paper is allowed. You will be held responsible for all reading material assigned, even if it is not explicitly covered in lecture notes.

Academic Integrity: You are encouraged to study together and to discuss information and concepts covered in class with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this should never involve one student having possession of a copy of all or part of work done by someone else. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero on the assignment

Teaching methodology Blended Online In class

Electronic platform(s) Moodle Microsoft Teams Microsoft Forms Zoom Skype

Evaluation Methods:

Evaluation Activity		Mark	Topic(s)	Period (Week)	Platform
	Assignments				
	Quizzes	1- 20		- Week 6	
		2- 30	- . - .	- Week 12	
	Projects				
	Final Exam	50	All topics	Week 16	
	Total	100			

Course Requirements Students should have a computer, internet connection, webcam, account on a Moodle and Microsoft Teams software/platform...etc if needed.

Last Revised: February 2023

Course Materials