

## **IE 469 Engineering Ethics**

**Year and Semester:** 2019-2020 Spring

**Credit Hour:** (3 0 3)

**ECTS:** 5

**Prerequisite(s):** Senior standing and consent of the instructor

### **Catalog Description**

The aim of this course is to teach how to formulate and resolve typical ethical issues by analyzing simple examples as well as case studies. Different approaches and perspectives to ethical problem solving are outlined and compared. Codes of Ethics for various engineering fields are studied. Apart from basic concepts of engineering ethics the following are also included in the subject matter: conflicts of interest, exchange of favors, risk, safety, liability, obligations of engineers to their employers and the society, intellectual property rights, environmental impact, and conflicting cultural values.

### **Reference Books**

- C.E. Harris Jr., M.S. Pritchard, M.J. Rabins, R.W. James, and E.E. Englehardt, *Engineering Ethics: Concepts and Cases* (5<sup>th</sup> ed.), Cengage Learning, 2013.
- D. Pons, *Engineering Ethics: Professional Judgment and Decision-Making in Morally Ambiguous Situations*, Elements, 2015.
- C. Whitbeck, *Ethics in Engineering Practice and Research* (2<sup>nd</sup> ed.), Cambridge University Press, 2011.
- C.B. Fleddermann, *Engineering Ethics* (4<sup>th</sup> ed.), Prentice-Hall, 2011.
- M. Martin and R. Schinzinger, *Introduction to Engineering Ethics* (2<sup>nd</sup> ed.), McGraw Hill, 2009.

### **Course Objective**

Introducing ethical concepts and professional codes of ethics for engineering fields. Helping students develop a sense of professional responsibility. Teaching basic analytical tools to resolve ethical problems.

### **Learning Outcomes**

On successful completion of the course, all students will have developed:

- Ability to formulate and solve ethical problems encountered as a professional engineer
- Awareness of professional codes of ethics, responsibility of engineers, accountability and relevant legal concepts
- Ability to do literary research while resolving ethical issues

On successful completion of the course, all students will be:

- Involved in teamwork
- Aware of ethical issues

## Course Outline

**Week 1:** Introduction to Engineering Ethics. Professions and professional ethics, NSPE (National Society for Professional Engineers) Code of Ethics and BER (Board of Ethical Review).

**Week 2:** Formulating ethical issues and problem solving. Relevant and irrelevant facts. Factual issues. Conceptual issues. Specific and general moral problems.

**Week 3:** Line drawing technique to solve moral problems. Creative middle way solutions for conflicting values.

**Week 4:** Personal ethics, and common morality. Common morality interaction with professional ethics. Utilitarian approach for moral problem solving.

**Week 5:** The respect for persons approach for moral problem solving. Divergence of utilitarian and respect for persons approaches. Creative middle ways.

**Week 6:** Responsibility in engineering. Obligation-responsibility, blame-responsibility, and role-responsibility. Reasonable care and good works.

**Week 7:** Individual responsibility and accountability, legal liability. Impediments to responsibility.

**Week 8:** Technology related ethical problems. Intellectual property rights. Trade and business secrets. Invasion of privacy.

**Week 9:** Honesty, integrity and reliability. Forms of dishonesty. Dishonesty in research and plagiarism. Expert witnessing. Confidentiality in client-professional relations. Responsibility of engineers to inform the public.

**Week 10:** Risk, safety, liability and engineering codes. Risk assessment. Utilitarian approach and acceptable risk. respect for persons approach and informed consent. Liability of engineers and the Tort Law.

**Week 11:** Engineers in organizations. Engineers as employees. Differences in perspective between managers and engineers. Critical and uncritical loyalty. Responsible disobedience.

**Week 12:** Engineers and the environment. Engineering codes with respect to environment. Reluctance to environmental protection in engineering codes. Legal perspective to protection.

**Week 13:** Balancing economy and protection. Degree-of-Harm criterion. Scope of professional ethics related to the environment.

**Week 14:** International engineering standards in the global context. Conflicting cultural values and professional ethics. Bribery, extortion, grease payments and gifts.

## Computer Usage

Students will use word editing and various tools and programs while writing their case study reports.

## Grading

Class Participation	10%
Case Study	20%
Midterm	30%
Final Exam	40%

## Lecture Hours

**Section 1:**      Monday      13:20—14:10 (KA-06)  
                         Friday      09:20—11:10 (HA-01)

## Lecturer

Hakan Özaktaş, Ph.D in Industrial Engineering  
Office: L-323, x1377, [ozaktas@cankaya.edu.tr](mailto:ozaktas@cankaya.edu.tr)  
Office hour: TBA

## Assistant

Hasan Kavlak, M.S in Industrial Engineering  
Office: L-321, x1362, [hkavlak@cankaya.edu.tr](mailto:hkavlak@cankaya.edu.tr)  
Office hour: TBA

## IMPORTANT NOTES

- Communication will be made through <http://webonline.cankaya.edu.tr>. Announcements should be checked regularly. Students should check their accounts to make sure that they can access the page of IE 469 through *webonline*.
- Every student should study regularly from the textbook.
- Minimum attendance of 70% for lectures is required. Class participation grade will be zero for those students who fail to achieve minimum attendance in class.
- Any student who has not attended at least 20% of the lectures will not be admitted to the Final exam.
- Make-up exams for the Midterms are given only for students who have medical reports given (or approved) by Çankaya University Health Center. All medical excuse reports should be officially submitted within 7 working days (starting from the end-date of the medical excuse). Make-up exams will not be given for applications which are not submitted on time.
- Make-up exams are not offered for students not having attended Final exams even in the presence of valid medical reports.
- There are no make-ups for missing case study submissions.
- Any sort of plagiarism will not be tolerated and disciplinary measures will be taken.