

Engineering Ethics

Syllabus Number

4G101

Special Subjects

Elective 2 credit

EGUCHI, Takeru

1. Course Description

It cannot be denied that worldwide destruction of nature is caused, or accelerated to say the least, by the progress of technology. It seems to be a historical fact that the idea that human beings are the ruler on the earth, and the nature is the object of human manipulation (anthropocentrism and mechanistic view of nature) has been leading the current environmental destruction. As a result, human beings are creating things such as industrial waste, nuclear fuel waste, decommissioned reactor, that cause serious problems that go beyond human capability.

What is to be asked here is the question "how engineers should be." Technology gain its "social" or "public" meaning, once it is presented to the society as a product from the laboratory or factory. To what extent can we then call engineers to account, when a trouble occurred? Is the "tool in itself" evil? Is it just the matter of self-responsibility of the people who "use" it? Or is the person who "created" or "produced" it responsible for the accident? We must reflect on what the "social responsibility" of engineers can mean, why ethics should be necessary for engineers, and how "technology" which is regarded as physical, engineering wisdom can be related to the humanistic issues such as "ethics." Students are first of all expected to recognize that ethical issues are something closely related to engineers. Let us think together, in an essential manner, about the relation between technology and human beings from the ethical point of view, before working in the real world. The important thing is to notice that the questions presented in the classroom have close relations with the matters we are working on in the real world. Finally, students will explore "how engineers should be," while gaining a deeper understanding of their roles and responsibilities in the society as technical experts. This course is designated to achieve to DP5.

2. Course Objectives

Students will be able to develop the ability to reflect upon the relation between technology and human beings from the ethical point of view. Students will also be able to get a better understanding of the social role of engineers, and to gain the skills to gather information, analyze the situation in which they are put, judge fairly, re-examine the hypotheses in an exact manner, when they are confronted with an accident or a problem.

3. Grading Policy

After having passed two mid-term papers, students must pass the final exam to acquire a credit (100%).

Students will receive feedback with comments when mid-term papers are returned.

4. Textbook and Reference

Textbook

松島隆裕 編 『技術者倫理』(2,160円)

ISBN-13: 978-4873617763

Subtext will be delivered via LMS system.

学術図書出版社

Reference

松島隆裕 編 『技術者入門』(1,944円)

ISBN-13: 978-4873617756

学術図書出版社

5. Requirements(Assignments)

It is highly recommended to read a book which teaches how to write an academic paper beforehand.

6. Note

7. Schedule

- [1] Scientific revolution and modern philosophy
- [2] Development of capitalism and the formation of professional ethics
- [3] Craftsmanship in Japan
- [4] The world after the world war II
- [5] The limit of rationalism and the change of human being
- [6] The tasks of new ethics
- [7] Ethical codes of engineering
- [8] Technology assessment
- [9] Intellectual property right
- [10] Case study 1: Tacoma Narrows bridge
- [11] Case study 2: the space shuttle Challenger / Chernobyl nuclear power plant accident
- [12] Case study 3: Japan Airlines Flight 123
- [13] Regional case studies
- [14] What kind of engineer would you like to be?
- [15] Review and summary --- What does ethics mean for engineers?

