Akashi College	Year	2023	Course Title	Ethics for Engineers

Course Information

Course Code	5001	Course Category	General / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Architecture and Civil Engineering	Student Grade	Adv. 1st
Term	Second Semester	Classes per Week	2
Textbook and/or Teaching Materials	齊藤・坂下編:「はじめての工学倫理」、昭和堂 and Printed materials		
Instructor	ITOH Hitoshi		

Course Objectives

(1) Understand the characteristics of an engineer's job and what kind of ethical responsibilities engineers have in response to them.
(2) Understand what ethical issues engineers may face in their day-to-day work.
(3) Have sufficient knowledge of the important social systems related to engineers when dealing with the above-mentioned issues.
(4) Develop the ability to devise effective solutions for typical ethical issues that engineers will encounter, based on the understanding and knowledge of (1) to (3).
In order to achieve the goals, students will need to study the prescribed textbooks in advance.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Fully understand the characteristics of an engineer's job and their ethical responsibilities.	Understand the characteristics of an engineer's job and their ethical responsibilities.	Do not fully understand the characteristics of an engineer's job and their ethical responsibilities.
Achievement 2	Fully understand what ethical issues engineers may face.	Understand what ethical issues engineers may face.	Do not understand what ethical issues engineers may face.
Achievement 3	Have sufficient knowledge of the important social systems related to engineers.	Have knowledge of the important social systems related to engineers.	Do not have knowledge of the important social systems related to engineers.
	Fully have the ability to devise effective solutions for ethical issues that engineers will encounter.	Have the ability to devise effective solutions for ethical issues that engineers will encounter.	Do not have the ability to devise effective solutions for ethical issues that engineers will encounter.

Assigned Department Objectives

Teaching Method

Outline	The daily lives of people today are based on highly developed science and technology. This science and technology is used by highly trained engineers who have a responsibility to society to use it properly based on their expertise. This responsibility is now becoming more important, and social interest is growing, too. This course will examine the specific details of this responsibility that engineers bear, what problems may arise in achieving it, and how to deal with that.
Style	Classes will be held in a lecture style. At the end of each class, students should write and submit a summary of the class content, their opinions, etc. and this will be evaluated as a small report. The liaison for this course is Omota.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. The class will use videos, newspaper articles. etc., and take many examples from recent accidents and corporate morals. Reference materials and other materials are introduced as appropriate during the class. Therefore, we would like students to show interest in areas other than their specialty field. Students who miss 1/3 or more of classes will not be eligible for a passing grade.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Why engineering ethics? Why is it necessary for those who aspire to be engineers to learn ethics? Clarify the links between engineers and ethics through today's social background, the codes of ethics established by the engineering academic societies, etc., and learn and confirm their significance.	Understand the links between engineers and ethics based on today's social background and the code of ethics.
		2nd	The space shuttle Challenger accident 1 Deal with the space shuttle Challenger accident, the most famous case in engineering ethics, and discuss the decisions made by the engineers and executives in the organization.	Understand the characteristics and relationships of the decisions made by the engineers and executives.
		3rd	The space shuttle Challenger disaster 2 Following the previous class, use the case of the Challenger accident as a guide and consider what responsibilities engineers have for making organization risk management function effectively.	Understand the responsibilities and abilities required of engineers for organization risk management.
		4th	The Tokaimura JCO criticality accident 1 Use the JCO criticality accident as an example to consider the significance of improvement activities that have supported the Japanese manufacturing industry, the challenges facing them, and how engineers should engage with them.	Understand the significance and challenges of improvement activities.

		5th	The Tokaimura JCO criticality accident 2 Following the previous class, use the JCO criticality accident to discuss group thinking, which collective organizations are prone to, and how technicians should deal with it to ensure safety and quality.	Learn the characteristics of group thinking and the abilities needed to deal with it and secure safety.
		6th	Whistleblowing 1 Discuss the purpose of the recently introduced whistleblower protection system, criticisms of the current laws, and the relationship between this system and engineers.	Acquire knowledge of the whistleblower protection system, and understand its issues.
		7th	Whistleblowing 2 Following the previous class, deal with whistleblowing. An increasing number of companies have established help desks, etc. as part of their efforts to enhance their compliance systems. Examine this trend's significance in the relationship between organizations and individuals.	Understand what needs to be kept in mind to ensure proper organizational behavior.
		8th	Product Liability Act Review the details of the Product Liability Act—which is said to be the most relevant law for engineers—and discuss that it is important for engineers to establish it as a manufacturing belief.	Gain appropriate knowledge of the Product Liability Act and become able to use it as a manufacturing belief.
	4th Quarter	9th	Intellectual properties Confirm the significance of the patent, copyright, and other systems for technology development, and examine the issues, etc., facing them that accompany information technology development, etc.	Acquire knowledge of intellectual property rights and understand their significance in manufacturing.
		10th	The Bhopal disaster 1 Use the agricultural chemicals factory accident in Bhopal, India—the biggest industrial accident in history—as an example to discuss the further increasing problems associated with overseas industrial activities as globalization progresses.	Acquire knowledge of the issues faced in overseas industrial activities.
		11th	The Bhopal disaster 2 Based on the previous class, examine the fact that there is a need for engineers to take into account that technology development is deeply related to the interaction between social conditions, culture, history, and thoughts, etc., that surround it.	Deepen understanding of the previous class and learn effective methods for overseas industrial activities.
		12th	The Roppongi Hills revolving door accident 1 Introduces the activities of the Door Project, which took place after the revolving door accident, and discuss the ideas and significance of failure studies and topics such as Heinrich's law in risk management.	Acquire knowledge of failure studies and Heinrich's law.
		13th	The Roppongi Hills revolving door accident 2 Based on the previous class, discus how engineers also have their own culture as engineers, and that it is important to pass down knowledge to overcome the problems that result from this.	Understand that in order to understand and use technology effectively, it is necessary to properly understand and communicate technology ideas.
		14th	Universal design Confirm that there is a political aspect to new technology development that gives birth to new power struggles and discrimination, whereas universal design is an attempt to democratize it.	Understand the concept of universal design and the systems necessary for achieving it.
		15th	The scope of engineering ethics New technology developments by engineers have had a variety of impacts in sectors such as information society and medical care. Consider the sort of relation that engineers should have to ethics in these other areas.	Understand the relationship between engineers and modern society and what their place in it should be.
		16th	No final exam	

Evaluation Method and Weight (%)

	Final Report	Short Reports＆Presentation	CBT of ethics for researcher	Total
Subtotal	60	30	10	100
Basic Proficiency	60	30	10	100
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	0	0	0