SUBJECT DATASHEET

ETHICS FOR ENGINEERS

BMEGT41M004

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name
ETHICS FOR ENGINEERS

ID (subject code)	BMEGT41M004

Type of subject
contact lessons

Course types and lessons

Type	*Lessons*
Lecture	2
Practice	0
Laboratory	0

Type of assessment
seminar grade

Number of credits
2

Subject Coordinator

Name	*Position*	*Contact details*
Dr. Héder Mihály	associate professor	heder.mihaly@gtk.bme.hu

Educational organisational unit for the subject
Department of Philosophy and History of Science

Subject website
https://edu.gtk.bme.hu

Language of the subject
magyar - HU; angol - ENG

Curricular role of the subject, recommended number of terms

Direct prerequisites

Strong	None
Weak	None
Parallel	None
Exclusion	None

Validity of the Subject Description

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

problems and conflicts arising during the various roles and duties an engineer must engage. The subject ● Provides an overview of the different aspects of ethical decision making. ● Introduces the ethical theories applicable during decision making. ● Discusses the methodology of rational decision making. ● Calls attention to the psychological factors distorting decision making and blocking morally acceptable decisions. ● Analyses certain typical problems arising in the field of engineering and discusses the proper approach to solving them. The course provides practical skills and forms attitudes that are indispensable for handling the technical, economic and ethical aspects of decision making together. Ethical considerations are not independent from tehcnico-economic considerations since the latter general have consequences for the former.

Academic results

Knowledge

1. Knows the general and specific characteristics, boundaries, the most important ethical issues of his / her field of specialization, the connection of the field of specialty with related fields of ethics.
2. Knows in detail the contexts and theories of the ethical issues and the its terminology.
3. Knows the specific ethical (knowledge acquisition and problem solving) methods related to his / her field, the ways of elaborating the practical aspects of the theoretical issues.
4. Knows well the ethical vocabulary of his / her field, the peculiarities of written and spoken language communication: the most important forms, methods and techniques in his / her mother tongue and at least one foreign language.
5. Possesses the range of ethical knowledge required to enter doctoral training in this and other fields of study.
6. Knows in detail the legal regulations and ethical norms related to his / her field.

Skills

1. Carries out a detailed analysis of the various ethical ideas that constitute the knowledge system of the given field, synthesizes the comprehensive and special contexts and carries out adequate assessment.
2. Identifies professional ethical problems with a multifaceted, interdisciplinary approach, explores and formulates the detailed theoretical and practical background needed to solve them.
3. Applies the ethical theories related to the field and the related terminology in an innovative way when solving problems.
4. Uses the knowledge transfer techniques of his or her field at a high level, and processes the publication sources in English and foreign languages, has the knowledge of effective information research and processing in relation to the ethical issues of his or her field.
5. Prepares independent, scientific summaries and analyzes of certain ethical topics of his or her field of expertise.

Attitude

1. Undertake the comprehensive and special relationships, the professional identity, which form the specific character, personal and community role of his or her field of expertise.
2. Authentically conveys the summary and detailed problems of the ethical issues of his or her profession.
3. Makes his or her decision in full strategic decision situations, as well as in unexpected life situations that require a new, complex approach, taking full account of legislation and ethical norms.
4. Takes the initiative to put his or her profession at the service of the community.
5. He or she has a developed professional identity and professionalism, which he or she undertakes towards the professional and wider social community.
6. He or she strives to put the latest achievements in his or her field at the service of self-improvement.
7. In connection with the most important ethical problems of his or her field of expertise, he or she acknowledges and represents the active civic and educational elements that determine them.
8. He or she embraces the principle that continuous professional socialization and personal learning are at the service of the common good.

Independence and responsibility

1. - Considers comprehensive and special professional issues with a significant degree of independence and development based on given sources.
2. - Independently represents his professional opinion in decision-making situations known in advance.
3. - Plans and carries out activities independently.
4. - Takes responsibility for their environmental and social effects in new, complex decision-making situations.

Teaching methodology

Lectures.

Materials supporting learning

- PPT-k a tárgy Moodle oldalán. / Slides availabe on Moodle.
- Arpaly, Nomy (2002). Unprincipled Virtue: An Inquiry Into Moral Agency – Chapter 3. Oxford University Press.
- Arpaly, Nomy & Schroeder, Timothy (2013). In Praise of Desire – Chapter 8-9. Oxford University Press.
- Audi, Robert, 2009, “Moral Virtue and Reasons for Action”, Philosophical Issues, 19: 1–20.
- Bratman, Michael.
- Bratman, Michael.
- Doris, J. (1998). Persons, situations, and virtue ethics. Nous 32, 504-530.

- Doris, J. (2002). Lack of character: Personality and moral behaviour – Chapter 2 and Chapter 3. Cambridge: Cambridge University Press.
- Levy, Neil (2011). Hard Luck: How Luck Undermines Free Will and Moral Responsibility – Chapter 8. Oxford University Press UK.
- Levy, Neil (2014). Consciousness and Moral Responsibility – Chapter 5-6. Oxford University Press.
- Merritt, M. (2000). Virtue ethics and situationist personality psychology. Ethical Theory and Moral Practice 3, 365-383.
- Miller, C. (2013). Moral character: An empirical theory – Chapter 1. Oxford: Oxford University Press.
- Miller, C. (2014). Character and Moral Psychology – Chapter 1-2. Oxford: Oxford University Press.
- Ridge, Michael.
- Upton, C. (2009). The structure of character. Journal of Ethics 13, 175-193.

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

Assessment of learning outcomes described under section 2.2.

Performance assessment methods

1. General course assessment: Complex assessement of the acquired knowledge and skills concerning knowledge production by two written
exams and two essay assignments. 2. Partial performance evaluation (optional in-class assignment): complex evaluation of the various competence elements in skill, attitude, independence and responsibility acquired during the course in the form of a written in-class assignment.

Percentage of performance assessments, conducted during the study period, within the rating

- **1. General course assessment (test)**: 50
- **2. General course assessment (test)**: 50
- **partial performance evaluation (optional written in-class assignment)**: 50
- **total**: 100

Percentage of exam elements within the rating

Conditions for obtaining a signature, validity of the signature

Issuing grades

Excellent	91
Very good	81-90
Good	71-80
Satisfactory	61-70
Pass	50 – 60
Fail	0 - 49

Retake and late completion

Retakes are regulated by the Code of Studies.

Coursework required for the completion of the subject

participation in contact hours	28
preparation for partial performance evaluation	32
optional work on in-class assignment	16
total	60

Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 04.03.2024.

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

Introduction to Engineering Ethics This lecture serves as an introductory overview of ethical theory and its significance within the engineering profession. It aims to establish a foundational understanding of ethical reasoning and its application in engineering decision-making
processes. Deontology (Duty Ethics) This session focuses on deontological ethics, emphasizing the importance of adhering to moral duties and rules in determining ethical conduct. It explores the application of duty-based ethics in engineering practices, highlighting the role of principled decision-making. Kantian Ethics and Contractualism This lecture examines Kantian ethics, emphasizing moral duty and rationality, alongside contractualism, which bases morality on the principles of social contracts. It discusses the implications of these theories for ethical decision-making within the engineering context. Consequentialism and Utilitarian Ethics This session addresses consequentialist theories, particularly utilitarianism, which assesses the morality of actions based on their outcomes. The lecture evaluates the impact of these ethical frameworks on engineering decisions and societal well-being. Virtue Ethics, Aristotle's Virtue Ethics, and Rawls' Theory of Justice This lecture explores virtue ethics, focusing on Aristotle's contributions and the development
of moral virtues, as well as John Rawls' Theory of Justice. It assesses their relevance to fostering ethical conduct and justice in engineering practices. 1st Partial Performance Evaluation This evaluation measures students' comprehension and application of ethical theories and principles discussed in the preceding lectures. It assesses their ability to critically engage with and resolve ethical dilemmas pertinent to engineering. Rational Decision Making This session delves into the methodologies and frameworks for rational decision-making. It emphasizes the importance of logical and critical thinking in navigating ethical challenges within engineering scenarios. Cognitive Biases at the Individual Level I Cognitive Biases at the Individual Level III These lectures investigate the influence of cognitive biases on individual judgment and decision-making. They aim to enhance awareness and understanding of these biases, proposing strategies to mitigate their impact on ethical decision-making in engineering. Optional In-Class Written Assignment This
assignment provides an opportunity for in-depth engagement with a specific ethical issue, preferably related to engineering. It requires the application of ethical theories and critical analysis to formulate reasoned arguments and conclusions. Cognitive Biases in Groups This
lecture examines the effects of cognitive biases on group decision-making processes, with a particular emphasis on teamwork in the engineering field. It discusses strategies to promote ethical decision-making and mitigate bias at the group level. Case Studies on Ethics in Engineering Practice I Case Studies on Ethics in Engineering Practice II These sessions involve the examination of real-world case studies to apply and critically assess ethical theories in practical engineering contexts. They encourage the analysis of complex ethical dilemmas and decision-making in professional engineering practice. 2nd Partial Performance Evaluation This final evaluation assesses the comprehensive understanding and integration of ethical theories, principles, and their application to case studies and ethical dilemmas in engineering. It aims to evaluate the students' analytical and problem-solving skills in ethics.

Additional lecturers

Sebestyén Marcell tudományos segédmunkatárs marcell.sebestyen@filozofia.bme.hu

Approval and validity of subject requirements