

Ethics, Engineering and Society (E075310)

Course size (nominal values; actual values may depend on programme)

Credits 3.0 Study time 90 h Contact hrs 15.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 2) Dutch lecture 15.0 h

Lecturers in academic year 2018-2019

Pennings, Guido LW01 lecturer-in-charge
Mertes, Heidi LW01 co-lecturer

Offered in the following programmes in 2018-2019

	crdts	offering
Bridging Programme Master of Science in Fire Safety Engineering	3	A
Master of Science in Electrical Engineering (main subject Communication and Information Technology)	3	A
Master of Science in Electromechanical Engineering (main subject Control Engineering and Automation)	3	A
Master of Science in Business Engineering (main subject Data Analytics)	3	A
Master of Science in Electromechanical Engineering (main subject Electrical Power Engineering)	3	A
Master of Science in Electrical Engineering (main subject Electronic Circuits and Systems)	3	A
Master of Science in Business Engineering (main subject Finance)	3	A
Master of Science in Electromechanical Engineering (main subject Maritime Engineering)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Construction)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Energy Engineering)	3	A
Master of Science in Business Engineering (main subject Operations Management)	3	A
Master of Science in Biomedical Engineering	3	A
Master of Science in Biomedical Engineering	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Computer Science Engineering	3	A
Master of Science in Computer Science Engineering	3	A
Master of Science in Fire Safety Engineering	3	A
Master of Science in Sustainable Materials Engineering	3	A
Master of Science in Engineering Physics	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Engineering Physics	3	A

Teaching languages

Dutch

Keywords

ethics, deontology, engineering, technique, society

Position of the course

Provide a usable conceptual framework to the graduating engineer to stimulate a sense of public responsibility with respect to technological developments.

Within the limited framework of this course it is not possible to cover an in depth treatment of the wide range of subjects related to ethical and social aspects of technological developments. On the basis of his acquaintance with the technical world in which engineers work, the lecturer will use an approach which stimulates the students to think, in a structured and independent way, about the role of technology in society and about ethically justified choices in relation to technical developments. The precise subjects may change from year to year. Examples of such subjects are listed hereafter.

Contents

The course starts with an overview of the main schools in normative ethics (utilitarianism, virtue ethics and deontology). The analysis of these theories is oriented towards the profession of the engineer. A presentation of the importance of professional societies, codes of ethics (like the IEEE Code of ethics) and specific moral capacities of the engineer is given. In the second part, a discussion of typical problems of engineering ethics takes place: whistle blowing, loyalty to the employer, responsibility and complicity for products and processes, non-competition clauses in contracts and use of knowledge and experience, evaluation of risks etc.

Initial competences

- Analysing both abstract and concrete problems
- Taking a stance regarding a problem
- Reflecting critically about the engineering profession
- Analysing societal consequences of new developments within the field of engineering or related fields
- Being conscious about the role of engineers in society

Final competences

- 1 Describe, recognise and discern the main theories in normative ethics
- 2 Describe the core aspects in deontologic codes for professional engineers
- 3 Indicate the advantages and shortcomings of a deontologic code
- 4 Name and define the different models for allocating liability within a company
- 5 Indicate the advantages and disadvantages of different models for assigning responsibility

- 6 Assessing in which particular situations whistleblowing is justified or even ethically required

- 7 Assessing the limits of loyalty towards an employer
- 8 Explaining the importance and shortcomings of the non-compete clause
- 9 Discerning the different principles that are used in the practice of risk reduction
- 10 Being aware of the limits of risk-assessments in making ethical decisions
- 11 Having an insight into the complexity of ethical decision making in relation to technological developments
- 12 Reflecting about the role of technology in society
- 13 Making ethically sound decisions in relation to the development of technology
- 14 Integrating societal responsibility and engagement in the engineering profession
- 15 Having an insight into the dilemma of dual use research and technology

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture

Extra information on the teaching methods

Classroom lectures

Learning materials and price

Syllabus (in Dutch, about 12.5 EURO)

References

Course content-related study coaching

Evaluation methods

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Written examination

Examination methods in case of periodic evaluation during the second examination period

Written examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

During examination period: written closed-book exam

Calculation of the examination mark

Evaluation during examination period