

Engineering Ethics

Code: 103804
ECTS Credits: 3

Degree	Type	Year	Semester
2502441 Computer Engineering	OB	3	2

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

There are none.

Objectives and Contextualisation

In the subject, the guidelines are offered to discover and manage the social implications and the polyvalence of technology. Initially, the basic concepts related to morality, ethics and responsibility are introduced. It shows how professional practice expresses the importance of analysis in decision making in order to recognize complex situations and assess the consequences of possible alternatives. It presents the fundamental ethical frameworks, the deontological codes associated with the professions and the global commitments for a fair, peaceful and sustainable human development.

Competences

- Acquire thinking habits.
- Act ethically and professionally.
- Analyse and evaluate the social and environmental impact of technical solutions and understand the ethical and professional responsibility of the activity of an IT engineer.
- Capacity to design, develop, select and evaluate computer applications and systems, ensuring reliability, security and quality, in accordance with ethical principles, and applicable standards and legislation.
- Communication.

Learning Outcomes

1. Assume and respect the role of the various team members , as well as different levels of dependence on the team.
2. Be familiar with the fundamental ethical frameworks and deontological codes.
3. Be sensitive to implicit or underlying ethical conflicts.
4. Communicate efficiently, orally or in writing, knowledge, results and skills, both in the professional environment and before non-expert audiences.
5. Contribute to the welfare of society and to sustainable development.
6. Detect and analyse ethical alternatives in real situations.

7. Develop a mode of thought and critical reasoning.
8. Discover and filter the social implications and polyvalence of technologies.
9. Distinguish the basic concepts related to morality and ethics.
10. Identify the inherent values of technological designs and environments.
11. Make rational decisions when faced with ethical dilemmas.
12. Respecting the diversity and plurality of ideas, people and situations.

Content

The subject introduces what are the main points of view about technology and what responsibility professionals have regarding the exercise of their profession. The main ethical frameworks that can help us in the analysis of situations where ethical conflicts appear are presented. It describes how ethics is focused on technical studies and how deontological codes have been established in different professions related to engineering. Cases of conflicting areas are studied to identify the consequences of possible courses of action. The topics are structured as follows:

1. FUNDAMENTAL ELEMENTS OF ETHICS

Concept, origins and topics

Foundations and relationships with other disciplines

Three ethical theories

Moral relativism

Areas of ethics. Applied ethics

2. ETHICS APPLIED TO SCIENCE AND TECHNOLOGY

Exploring neutrality in science and technology

Instrumental rationality

Technology assessment

Moral responsibility in science and technology

Duties derived from science and technology

3. PROFESSIONAL ETHICS

Professional responsibility

Deontological codes and professional ethics

Conflicts between standards

Conflicts of interest

Ethics in research

4. GLOBAL DIMENSION OF DEVELOPMENT

Ecological and social crisis

Sustainable development

Globalization

Economy and sustainability

Methodology

The subject consists of a theoretical part, a practical part, and a personal part where the student works home. A total of 25 face-to-face hours are taught to the student which are distributed according to the table of training activities. The total dedication of the student is 75 hours, therefore, there is a outside dedication of 50 hours.

TRAINING ACTIVITIES

Lectures

Sessions where the basic contents that the student must know are presented. Likewise, the possible ways to complete or deepen the information received in these sessions are indicated. In some of these sessions, group learning activities can be carried out in which the participation of all students will be requested.

Seminar sessions

In these sessions, an academic paper that everyone has had the opportunity to read and analyze previously is analyzed in common. The objective is to induce active participation through the proposal, criticism, or reasoned defense, of options to be followed or measures to be adopted. It will be possible to form dialogue groups that should expose the analyzed text from an ethical perspective.

Practices sessions

Group activities where conflict cases or ethical challenges are studied using the concepts seen in lectures. From the dialogue in the group the different ways of action that the case allows and the foreseeable consequences are considered. The teams prepare a presentation in which the case is exposed to the rest of the students, describe the actions considered and the conclusions to which they have arrived. At the beginning of the presentation, a written report is presented where the presentation is summarized.

TRANSVERSAL COMPETENCES

The transversal competences will be worked and evaluated in several moments throughout the course. specifically:

T01.01. Develop a critical mode of thinking and reasoning. In the report on the practice and in the oral defense of the practice based on the questions formulated by the teacher.

T04.01. Communicate efficiently, orally or in writing, knowledge, results and skills, both in professional environments and to non-expert public. In the report on the practice and in the oral defense of the practice based on the questions formulated by the teacher.

T05.01. Assume the social, ethical, professional and legal responsibility, if any, that may arise from the practice of professional practice. In the questions that appear in the final written test.

T05.02. Respect the diversity and plurality of ideas, people and situations. In the questions that appear in the final written test.

T05.03. Contribute to the welfare of society and sustainable development. In the questions that appear in the final written test and in the practice report.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
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Type: Directed

Lectures	13	0.52	1, 5, 8, 9, 2, 12
Seminars and practices	12	0.48	4, 5, 7, 6, 10, 11, 3
Type: Autonomous			
Personal work	30	1.2	6, 9, 10, 3
Study for the final exam	6	0.24	9, 2

Assessment

a) Both the knowledge acquired in relation to the objectives set in the subject and the degree of the skills and competences that were to be developed will be taken into account.

b) The dates of the assessment tests and the concretion of the practices for the teams will be published in the Virtual Campus as it is convenient.

c) The final grade will be obtained from the sum of the scores of the three scheduled activities: test on the assigned readings (2 points), team practice (3 points) and final test (5 points). The student has the right to a second chance for the final test, over 5 points, if he has not passed the subject in the continuous assessment. To pass the subject it is necessary to have obtained a minimum score of 1.5 points in practice and 2 points in the final test. If this minimum grade is not reached in any of the two activities evaluated, the final grade will be a 3 (fail). The qualification obtained is, non-evaluable, if the student has not participated in any of the evaluation activities that require a minimum score.

d) For the final assessment activity, a place, date and time of revision will be indicated, in which the student can review the activity with the teacher. In this context, claims may be made on the activity grade, which will be evaluated by the faculty responsible for the subject. If the student does not attend this review, the activity will not be reviewed later.

e) The current regulations established by the UAB will be applied when deciding what students pass the course with honors. Apart from the grade obtained, special attention will be paid to regular attendance at the sessions, as well as active and enriching participation in the activities.

f) Without prejudice to other disciplinary measures deemed appropriate, and in accordance with current academic regulations, irregularities committed by a student that may lead to a variation of the grade will be scored with a 0. For example, plagiarizing, copying or allowing an evaluation activity to be copied will imply suspending the assessment activity with a 0. The assessment activities qualified in this way and by this procedure will not be recoverable.

g) All students repeating the subject will be evaluated under the same criteria that new students.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Case of study presentation	25%	6	0.24	8, 6, 9, 3
Final exam	50%	2	0.08	1, 6, 9, 2, 11, 12
Test on reading	25%	6	0.24	4, 5, 7, 6, 10, 3

Bibliography

Bilbao, Galo; Fuertes, Javier y Guibert, José M^a (2006). *Ética para ingenieros*. Desclée De Brouwer.

Bynum, Terrell Ward and Rogerson, Simon (eds.) (2004). *Computer Ethics and Professional Responsibility*. Blackwell Publishing.

Harris, Charles E.; Pritchard, Michael S.; Rabins, Michael J.; James, Ray and Englehardt, Elaine (2018). *Engineering Ethics: Concepts & Cases*. Cengage Learning.

Ibarra, Andón y Olivé, León (eds.) (2003). *Cuestiones éticas en ciencia y tecnología en el siglo XXI*. Biblioteca Nueva (access online, UAB).

<https://cutt.ly/qnTRvr3>

Pieper, Annemarie (1991). *Ética y moral. Una introducción a la filosofía práctica*. Crítica.

Xercavins, Josep; Cayuela, Diana; Cervantes, Gemma i Sabater Assumpta (2005).

Desarrollo sostenible. Edicions UPC (access online UPCommons).

<https://upcommons.upc.edu/handle/2099.3/36752>

Software

No required.