EPFL

HUM-412   **The ethics of engineering I**

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Cursus	Sem.	Type
Humanities and Social Sciences	MA1	Obl.

Language of teaching	English
Credits	3
Session	Winter
Semester	Fall
Exam	During the semester
Workload	90h
Weeks	14
Hours	**3 weekly**
Lecture	2 weekly
Project	1 weekly
Number of positions	**60**

Remark

Une seule inscription à un cours SHS+MGT autorisée. En cas d'inscriptions multiples elles seront toutes supprimées sans notification.

Summary

L'objectif de ce séminaire est d'amener les étudiants à réfléchir aux enjeux éthiques que les nouvelles technologies peuvent soulever, parmi lesquels leur incompatibilité avec l'autonomie, la liberté ou la confidentialité de leurs usagers, leurs risques existentiels ou écologiques.

Content

The goal is to drive students to reflect on the various ethical concerns that new technologies may generate, among which their impact on the environment, their incompatibility with the autonomy or confidentiality of their users, their unequal accessibility, or the risks of being misapplied by badly intentioned users. The students will also learn about the potential solutions (such as regulations, Code of Ethics of Engineering, whistleblowing, etc.) to these ethical challenges.

Content

- In Fall, the participants attend an introductory course, with a special focus on ethical issues around biomedical enhancing technologies (smart drugs), digital nudges (anticyberbullying app), genetic technologies (CRISPR-Cas9), geoengineering (Cloud brightening), among others.

- In Spring, students work on either a joint or an individual project of their choice, in agreement with the teachers and under their supervision. Depending on the nature of the project, the latter could be realized in collaboration with other EPFL researchers.

Keywords

Ethics of engineering
Collective harm problem
Scientific integrity
Autonomy
Privacy
Existential risks
Digital apps
Human enhancement

Learning Prerequisites

Required courses

No prequisites

Learning Outcomes

By the end of the course, the student must be able to:

- Identify the ethical issues that engineers may encounter in their professional activities.
- Use ethical concepts and tools in order to form their own ethical judgement in the matter.
- Propose practicable solutions

Transversal skills

- Demonstrate the capacity for critical thinking
- Write a scientific or technical report.
- Take responsibility for health and safety of self and others in a working context.
- Take responsibility for environmental impacts of her/ his actions and decisions.
- Take account of the social and human dimensions of the engineering profession.
- Make an oral presentation.
- Write a literature review which assesses the state of the art.

Teaching methods

Students will be taught by 3 methods:
1. They will be given a weekly introductory course given in English, aiming at providing them the "nuts and bolts" that they need to pursue their projects (Winter)
2. They will benefit from the coaching of experts, while developing their own project. (Winter/Spring)
3. They will be given time to develop their project as they wish (Winter/Spring)

Expected student activities

- Participate to the weekly sessions of the introductory courses in Fall
- Participate to the weekly sessions of the travaux pratiques in Spring
- Realise a project
- Defend their project during an oral presentation, followed by a discussion.

Assessment methods

The second evaluation, at the end of Spring, bears on the advancement made of the project, the written report, the final oral presentation and discussion.

Supervision

Office hours	No
Assistants	Yes
Forum	Yes

Resources

Virtual desktop infrastructure (VDI)

No

Références suggérées par la bibliothèque

- Ethics of artificial intelligence / ed. by S. Matthew LiaoLiao
- Science and engineering ethics (2015) vol. 21, no 3

Notes/Handbook

https://books.google.ch/books?hl=fr&lr=&id=1yT3DwAAQBAJ&oi=fnd&pg=PP1&dq=peter+railton+Artificial+intelligence&
https://link.springer.com/journal/11948/volumes-and-issues/21-3

Websites

- https://www.practicalethics.ox.ac.uk/our-research
- https://futureoflife.org/2020/08/18/peter-railton-on-moral-learning-and-metaethics-in-ai-systems/

Moodle Link

- https://go.epfl.ch/HUM-412

Videos

- https://futureoflife.org/2020/08/18/peter-railton-on-moral-learning-and-metaethics-in-ai-systems/