GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

The Information Society and ICT (E076320)

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

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)	Dutch	Gent	group work	0.0h
			lecture	15.0h

Lecturers in academic year 2023-2024

Evens, Tom	PS01	staff member
Sterckx, Sigrid	LW01	staff member
Van Bauwel, Sofie	PS01	staff member
Vermeulen, Gert	RE23	staff member
Mannens, Erik	TW06	lecturer-in-charge
Bourgonjon, Jeroen	PS01	co-lecturer

Offered in the following programmes in 2023-2024	crdts	offering
Bachelor of Science in Engineering(main subject Computer Science 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 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 Industrial Engineering and Operations Research(main subject Manufacturing and Supply Chain Engineering)	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 Communication Science(main subject New Media and Society)	3	A
Master of Science in Industrial Engineering and Operations Research(main subject Transport and Mobility Engineering)	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Engineering Physics	3	A
Master of Science in Engineering Physics	3	A
Master of Science in Fire Safety Engineering	3	A
Master of Science in Industrial Engineering and Operations Research	3	A
Master of Science in Information Engineering Technology	3	A
Master of Science in Materials Engineering	3	A
Master of Science in Sustainable Materials Engineering	3	A

Teaching languages

Dutch

Keywords

information society, ICT, innovation, digital technology, internet, sustainability

Position of the course

Today digital innovation is mainly spoken of in extremes: either one believes that thanks to robots we will never again have to work in unhealthy and dangerous situations, others are afraid that artificial intelligence will cause massive unemployment. According to some, Big Data will help us to cure diseases, whereas others fear that soon we will all just be struggling to check our health status via smartphones. In short, while technology can make people's lives healthier, happier, safer, and more prosperous, digitization is also leading to new social, economic, privacy, and ethical challenges.

Whether it concerns robotisation, the rise of artificial intelligence, or the physical fusion of man and machine, a number of questions always return: What is the possible impact of this innovation on the individual and society? And how do we ensure that everyone benefits from this technology?

To answer these questions, there is a need for a sustainable vision on innovation, which takes into account the relationship between individual, technology, and society. Sustainable innovation not only focuses on what is economically, socially, legally, culturally, and medically possible, but also searches for what is desirable for all stakeholders.

In this course, students are given (a) an interdisciplinary and multi-perspective thinking framework to reflect on the long-term effects of technological innovation, and (b) concrete tools for sustainable digital innovation based on this analysis for the overall benefit of people and society.

Contents

In this course, students learn to approach technological innovation issues in an interdisciplinary and multi-perspective manner, with the aim of exploring the possibilities and challenges of new digital technologies and setting the beacons for desirable innovation projects that serve both individual people and society as a whole.
In the first lesson, students learn about the importance of sustainable digital innovation and are provided with a broad frame of thought with which they can reflect on the long-term effects of technological innovations on people and society. Students are divided into groups and choose a real-life use case that they will analyze with the taught frame of mind, elaborate in writing, and present orally (e.g., an AI decision support system for emergency doctors, or a new app to track social distancing).
In the following lessons, each time a partial aspect of the conceptual framework is explained in detail by the subject matter expert at hand from the economic, social, philosophy and ethics, law, and engineering sciences. These experts teach students how they approach innovation issues of this kind in their specific research and practice interests, after which they take the time to reflect with the students on the different real-life group cases. Finally, each lesson also discusses a number of technological techniques take into account the concerns of the subject expert of the day (e.g., privacy-preserving or bias-free AI techniques). In this way, the students broaden their perspective on digital innovation lesson after lesson and are provided with tools to realize sustainable technological solutions.
In the last lesson, all insights in the field of innovation research are integrated and repeated. This lesson also teaches communicative and educational techniques that enable students to communicate their key findings in a clear and comprehensible manner to various stakeholders in the innovation process.
At the end of the class, students are required to give an oral presentation of their written group work. This approach helps students to:

- Advise policy makers on the long-term effects of digitization
- Help entrepreneurs develop applications that are market and society proof
- Support researchers to create greater social impact

Initial competences

Bachelor degree

Final competences

1 To be able to paint a coherent and substantiated picture of disruptive technologies.
2 To articulate the benefits of sustainable innovation for various stakeholders.
3 To reflect on and anticipate the long-term effects of digitization.
4 Being able to formulate a desirable future image supported by certain/all stakeholders.
5 To support stakeholders in their digital innovation processes.

Conditions for credit contract

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

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Seminar, Lecture

Extra information on the teaching methods

- Lecture: each lecture focuses on a new angle in digital innovation.
- Group discussion: during each lecture, a concrete case is discussed and technologically tested.
- Group work: the students independently develop a case that includes every perspective presented (economic, socio-cultural, ethical, legal, philosophical and technological).

Learning materials and price

- A reader with links to articles in leading popular science journals.
- Annotated presentation slides made available through Ufora.

References

Course content-related study coaching

Assessment moments

end-of-term and continuous assessment

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

Oral assessment, Assignment

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

Oral assessment, Assignment

Examination methods in case of permanent assessment

Participation, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

- Periodic evaluation: presentation of the group assignment (in a video format)
- Non-periodic evaluation: assessment of group work and interim assignments.

Calculation of the examination mark

- Examination 20%
- Group work: 80%