

Information Technology for Industrial Engineering (E076341)

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

Credits 3.0 **Study time 90 h**

Course offerings in academic year 2023-2024

A (semester 2)	English	Gent
B (semester 2)	Dutch	Gent

Lecturers in academic year 2023-2024

Vlaminck, Michiel TW07 lecturer-in-charge

Offered in the following programmes in 2023-2024

	crdts	offering
Bridging Programme Master of Science in Industrial Engineering and Operations Research(main subject Manufacturing and Supply Chain Engineering)	3	A
Bridging Programme Master of Science in Industrial Engineering and Operations Research(main subject Transport and Mobility Engineering)	3	A
Master of Science in Industrial Engineering and Operations Research(main subject Manufacturing and Supply Chain Engineering)	3	A
Master of Science in Industrial Engineering and Operations Research(main subject Sustainable Mobility Analytics)	3	A
Master of Science in Industrial Engineering and Operations Research(main subject Transport and Mobility Engineering)	3	A
Master of Science in Industrial Engineering and Operations Research	3	B

Teaching languages

English, Dutch

Keywords

ICT architecture, Internet, networks, data communications

Position of the course

The aim of this course is to provide students with a general overview of the ICT domain, data communications and data processing. This is treated from a utilitarian point of view of the user. The students will learn to speak, judge, and decide about these domains in a professional manner.

Contents

- Technology and operation of ICT systems, wired and wireless communication networks.
- The Internet and the role of protocol stacks (OSI, TCP/IP...) and IoT.
- Network applications and information security. Application aspects of network architecture
- (client-server, P2P, ..., Quality of Service/Experience) and prominent network application domains (search engines, cloud computing, smart grid). Principles of information security mechanisms and protocols.
- Main principles of some integrated information systems like data warehouse, enterprise resource planning and geographic information system.
- Concepts of big data and data mining behind these systems. Description of a range of system development approaches, including agile development.
- Guest lectures from industrially relevant ICT topics like IIoT, digital twins, ERP, blockchain...

Initial competences

Basic computer usage

Final competences

- 1 Assessing the structure and performance of computer architectures.
- 2 Assessing the structure of various wired and wireless network architectures.
- 3 Understanding the operation and role of network protocol architectures and information security principles.
- 4 Appreciating the capabilities and limitations of ICT applications.
- 5 Deciding on an appropriate system development methodology in the ICT domain.

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

Seminar, Lecture, Independent work

Learning materials and price

Slides, reference book

References

- Stallings, William; Case, Thomas; Business data communications, 7th edition, International edition, Pearson Education, 2012. ISBN: 9780273769163
- Fitzgerald, Jerry et al. Business Data Communications and Networking, 14th edition, 2020 ISBN: 978-1119702849

Course content-related study coaching**Assessment moments**

end-of-term assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

Examination methods in case of permanent assessment**Possibilities of retake in case of permanent assessment**

not applicable

Calculation of the examination mark