

## Communication Networks (E008620)

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

**Credits 6.0**

**Study time 180 h**

**Course offerings and teaching methods in academic year 2024-2025**

A (semester 1)

Dutch

Gent

lecture

practical

**Lecturers in academic year 2024-2025**

Tavernier, Wouter

TW05

lecturer-in-charge

**Offered in the following programmes in 2024-2025**

[Bachelor of Science in Engineering\(main subject Computer Science Engineering\)](#)

6

A

[Bachelor of Science in Engineering\(main subject Electrical Engineering\)](#)

6

A

[Bachelor of Science in Computer Science](#)

6

A

[Master of Science in Teaching in Science and Technology\(main subject Mathematics\)](#)

6

A

**Teaching languages**

Dutch

**Keywords**

computer networks, telecommunication networks, Internet, TCP/IP

**Position of the course**

This is a basic course with as major goal to teach students the basic concepts and operational aspects of communication networks, with emphasis on internet technology.

**Contents**

The Internet: Top-down Model, Application Layer, Transport Layer, Network Layer, Data Link Layer, Network Security

**Initial competences**

Use of Linux operating system.

**Final competences**

- 1 Being able to work with the following concepts: protocol reference model; application layer protocols HTTP, SMTP, POP, ...; state diagram, message sequence chart, retransmission protocols, routing protocols (IGP and EGP), sub networks, addressing, MAC protocols, Ethernet switching, security protocols.
- 2 Understand how to build a network, applications versus application layer protocols, reliability, flow and congestion control, routing en switching, network hierarchy, medium access control, public versus symmetric encryption, authentication, encryption, integrity, architecture.
- 3 Use and development of application layer protocols
- 4 Setup of IP networks
- 5 Configuration of Ethernet networks
- 6 Design and set-up of a secure network (layer 2 up to layer 5)
- 7 Have critical attitude during the design and evaluation of communication networks, based on a thorough understanding of the technical issues.

**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

Lecture, Practical

### Study material

Type: Handbook

Name: Handbook

Indicative price: € 69

Optional: no

Additional information: "Computer Networking: A top-down approach featuring the Internet", James F. Kurose, Keith W. Ross; 8th edition; Addison Wesley, 2021, ISBN 978-1292405469. (indicative price: 55 euro)

### References

- "Computer Networks", Andrew S. Tanenbaum; 6th edition; Pearson Education International, 2021, ISBN 978-1292374062
- "TCP/IP Illustrated, Volume 1", W. Richard Stevens, Addison Wesley, 2011, ISBN 978-0321336316
- Kozierok, Charles M. *The TCP/IP guide: a comprehensive, illustrated Internet protocols reference*. No Starch Press, 2005.

### Course content-related study coaching

Support using e-mail and by appointment, on-campus interaction moments, use of the electronic learning environment and feedback about the practical exercises

### Assessment moments

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

### Examination methods in case of permanent assessment

Skills test, Assignment

### Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

### Extra information on the examination methods

During examination period: written closed-book exam; written open-book exam - problems

During semester: graded lab sessions. Second chance: Not possible

5 quoted labs in the second half of the semester.

### Calculation of the examination mark

25% evaluation during semester, 75% evaluation during examination period