

COM-208

**Computer networks**

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Cursus	Sem.	Type
Communication systems	BA3	Obl.
Computer science	BA3	Obl.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Lecture	2 weekly
Exercises	2 weekly
<b>Number of positions</b>	

**Remark**

réservé aux étudiants de IC devant refaire la matière

**Summary**

This course provides an introduction to computer networks. It describes the principles that underly modern network operation and illustrates them using the Internet as an example.

**Content**

- Overview of Internet operation (main components and protocols).
- Application layer (web, cookies, peer to peer).
- Socket programming (how to write a very simple network application).
- Transport layer (UDP, TCP, congestion control).
- Network layer (IP forwarding and basic routing).
- Data link layer (switching).
- Security (secure email, SSL, IPsec).

**Keywords**

- Computer networks
- Internet
- HTTP
- Peer-to-peer networks
- Sockets, TCP/IP, congestion control, routing, switching, network security

**Learning Prerequisites****Required courses**

- CS 107 - Introduction to programming
- COM 101 - Advanced Information Computation Communication I

**Learning Outcomes**

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

- Design simple network applications.
- Choose which functions to implement at each network layer.
- Compare different network protocols.
- Perform simple network troubleshooting.
- Use simple network monitoring tools.
- Implement simple client-server applications.
- Investigate simple network attacks.
- Explain how basic Internet applications work.

### Transversal skills

- Use both general and domain specific IT resources and tools
- Use a work methodology appropriate to the task.
- Demonstrate the capacity for critical thinking
- Demonstrate a capacity for creativity.

### Teaching methods

- Lectures
- Homework problems
- Hands-on exercises

### Expected student activities

- Attend the lectures
- Complete homework problems
- Complete hands-on exercises
- Study their notes and -- when needed -- complement by reading relevant book chapters

### Assessment methods

- Final exam
- Midterm exam
- Quizzes (online)

### Supervision

Office hours	Yes
Assistants	Yes
Forum	Yes

### Resources

#### Virtual desktop infrastructure (VDI)

Yes

### **Bibliography**

Computer Networking: A Top-Down Approach by James F. Kurose and Keith W. Ross.

### **Ressources en bibliothèque**

- [Computer Networking / Kurose](#)

### **Moodle Link**

- <https://go.epfl.ch/COM-208>