

COM-405

**Mobile networks**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Communication systems minor	E	Opt.
Computer science	MA2, MA4	Opt.
Cyber security minor	E	Opt.
Cybersecurity	MA2, MA4	Opt.
Electrical and Electronical Engineering	MA2, MA4	Opt.
Mineur STAS Chine	E	Opt.
Robotics, Control and Intelligent Systems		Opt.
SC master EPFL	MA2, MA4	Obl.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	Written
Workload	120h
Weeks	14
<b>Hours</b>	<b>3 weekly</b>
Courses	2 weekly
Exercises	1 weekly
<b>Number of positions</b>	

**Summary**

This course provides a detailed description of the organization and operating principles of mobile communication networks.

**Content**

Introduction to wireless networks  
 Organization of the MAC layer  
 Wireless Local Area Networks - WiFi  
 Cellular networks  
 Mobility at the network and transport layers  
 Security and privacy in mobile networks

**Keywords**

Communication networks, protocols, mobility

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

COM-208 Computer Networks

**Recommended courses**

COM-302 Principles of Digital Communications  
 COM-301 Computer security

**Important concepts to start the course**

Operating principles of communication protocols and layer organization.

**Learning Outcomes**

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

- Synthesize the way a mobile network operates
- Interpret the behavior of such networks
- Propose evolutions to existing protocols
- Identify weaknesses, bottlenecks and vulnerabilities

**Teaching methods**

Ex cathedra lectures  
Weekly quizzes  
Exercise sessions  
Hands-on exercises

### **Expected student activities**

Class participation, quizzes, homework, hands-on exercises

### **Assessment methods**

Quizzes + final exam

### **Supervision**

Office hours	No
Assistants	Yes
Forum	No

### **Resources**

#### **Bibliography**

Handouts, recommended books (see course URL)

#### **Ressources en bibliothèque**

- [Fundamentals of Mobile Data Networks / Miao](#)