# Mobile networks

*Hubaux Jean-Pierre*

<table>
<thead>
<tr>
<th>Cursus</th>
<th>Sem.</th>
<th>Type</th>
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<td>Cyber security minor</td>
<td>E</td>
<td>Opt.</td>
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<td>Cybersecurity</td>
<td>MA2, MA4</td>
<td>Opt.</td>
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<td>Génie électrique et électronique</td>
<td>MA2, MA4</td>
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<td>Mineur en Systèmes de communication</td>
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<td>SC master EPFL</td>
<td>MA2, MA4</td>
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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**
  - Computer Networks

- **Recommended courses**
  - Principles of Digital Communications
  - Network 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
Others The lecturer will be present at most of the exercise sessions.

Resources
Bibliography
Handouts, recommended books (see course URL)

Ressources en bibliothèque
• Fundamentals of Mobile Data Networks / Miao

Websites
• http://mobnet.epfl.ch/