The objective of this course is to train students in aspects of functionality, size and service of mobile cellular networks. First the basic concepts that enable such networks to operate. Then delve into the strategies used to perform the transfer functions of search and tracking of mobile terminals. The second part of the course focuses on the operation of transport and access networks that make up the mobile communication networks. Explain its elements, its signs and how to dimensionate them.

Learning outcomes:

- It has capacity to build, operate and manage networks, services, processes and telecommunications applications from the point of view of telematic services.
- Is able to apply management techniques, signaling, switching, routing and routing networks in fixed and mobile environments.
- You can analyse using traffic engineering (graph theory, queuing theory and teletraffic).
- Are you familiar with the protocols and communication interfaces at different levels of network architecture and is able to describe them, program them, validate them and optimize them.
- Meet the technological progress of transmission, switching and process to improve the networks and online services.
- Plan and agreed objectives, operating rules, responsibilities, agenda and procedure for reviewing the work.
230161 - SSMOB - Support Systems for Mobile Communications

- Identifies, models and poses from open situations. Explore and apply alternatives for their resolution. Use approaches.

<table>
<thead>
<tr>
<th>Study load</th>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>65h</th>
<th>43.33%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Self study:</td>
<td>85h</td>
<td>56.67%</td>
</tr>
</tbody>
</table>
# Content

## Item 1. Basic functions of a mobile network.

**Learning time:** 29h 50m  
Theory classes: 11h 30m  
Self study: 18h 20m

**Description:**  
Choosing base station, access, configuration, communication and monitoring.  
Search, locate and transfer.  
Performance parameters in wireless systems.  
Basic services of a mobile system: based circuit-mode and packet-based mode.

## Item 2. Handover analysis techniques.

**Learning time:** 12h 40m  
Theory classes: 6h  
Self study: 6h 40m

**Description:**  
Description and analysis of the technical handover of cellular mobile systems.

## Item 3. Paging strategies.

**Learning time:** 8h 20m  
Theory classes: 4h  
Self study: 4h 20m

**Description:**  
Search for static routes.  
Looking for dynamic areas.  
Evaluation of delay.

## Item 4. Localization.

**Learning time:** 12h 30m  
Theory classes: 6h  
Self study: 6h 30m

**Description:**  
Localization techniques.  
Combined use of location and searches.
## Item 5. Access network.

**Description:**
Evolution.
Types of information: signaling, synchronization, control and user.
Transport systems.
Dimensioning of the network: services and services not elastic.

**Learning time:** 19h 50m
- Theory classes: 9h
- Self study: 10h 50m


**Description:**
Evolution.
Switching elements.
Elements of control: signaling network.
Elements of building services: IMS.
Interconnection networks.
Sizing of elements and interfaces.

**Learning time:** 12h 20m
- Theory classes: 6h
- Self study: 6h 20m

## Project Planning

**Description:**
Project planning raised in class and group supervised query.

**Learning time:** 13h 30m
- Theory classes: 3h 30m
- Self study: 10h

## Qualification system

Project Planning: 20%
Partial control: 30%
Final exam: 50%
Bibliography

Basic:


Others resources:

Hyperlink
Atenea
Atenea