# 230651 - OVNET - Overlay Networks

**Coordinating unit:** 230 - ETSETB - Barcelona School of Telecommunications Engineering  
**Teaching unit:** 744 - ENTEL - Department of Network Engineering  
**Academic year:** 2020  
**Degree:**  
MASTER’S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Compulsory)  
MASTER’S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Teaching unit Optional)  
**ECTS credits:** 5  
**Teaching languages:** English

## Teaching staff

**Coordinator:** OSCAR ESPARZA  
**Others:** JOSÉ LUIS MUÑOZ, JUANJO ALINS, JORGE MATA

## Prior skills

Skills to deal with Linux, networks and command line interface

## Requirements

TCP/IP protocol suite  
Firewall configuration  
Linux networking

## Degree competences to which the subject contributes

### Specific:

1. Ability to deal with the convergence, interoperability and design of heterogeneous networks with local, access and core networks, as well as with service integration (telephony, data, television and interactive services).
2. Ability to design and dimension transport, broadcast and distribution networks for multimedia signals.
3. Ability to model, design, implement, manage, operate, administrate and maintain networks, services and contents.
4. Ability to plan networks and decision-making about services and applications taking into account: quality of service, operational and direct costs, implementation plan, supervision, security processes, scalability and maintenance. Ability to manage and assure the quality during the development process.
5. Ability to understand and to know how to apply the functioning and organization of the Internet, new generation Internet technologies and protocols, component models, middleware and services.

### Transversal:

6. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.
7. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.
Learning objectives of the subject:

- Ability to design and deploy overlay networks and more specifically, those that provide multimedia services over the Internet.
- Ability to use and analyze networks.
- Ability to understand the basic working of some existing overlay networks.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group:</th>
<th>26h</th>
<th>20.80%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>13h</td>
<td>10.40%</td>
</tr>
<tr>
<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>86h</td>
<td>68.80%</td>
</tr>
</tbody>
</table>
### 1. Introduction

**Description:**
Introduction to the concept of overlay and underlaying network, kinds of networks and typical examples.

**Learning time:** 5h  
Theory classes: 2h  
Self study: 3h

### 2. p2p

**Description:**

**Learning time:** 16h  
Theory classes: 6h  
Self study: 10h

### 3. IP tunnels

**Description:**
Creation and management of IPIP tunnels. Problems and solutions of tunnels.

**Learning time:** 26h  
Theory classes: 2h  
Laboratory classes: 4h  
Self study: 20h

### 4. Multicast

**Description:**

**Learning time:** 26h  
Theory classes: 2h  
Laboratory classes: 4h  
Self study: 20h

### 5. SIP

**Description:**
SIP signalling. SIP session management. SIP call with and without proxies.

**Learning time:** 30h  
Theory classes: 4h  
Laboratory classes: 4h  
Self study: 22h
Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab sessions</td>
<td>12h</td>
<td>Laboratory classes: 12h</td>
</tr>
<tr>
<td>Quizzes</td>
<td>3h</td>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Lab exam</td>
<td>2h</td>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Lectures</td>
<td>26h</td>
<td>Theory classes: 26h</td>
</tr>
</tbody>
</table>

Qualification system

- Short answer quizzes: 60%
- Laboratory exam: 30%
- Attendance: 10%


Regulations for carrying out activities

Each chapter will be evaluated by a quiz.
The laboratory exam will be practical (using the lab tools) and individual
Attendance is mandatory in lectures and lab sessions, and it will be controlled every class day.

Bibliography

Basic:

Complementary: