Learning objectives of the subject:

The aim of this course is to give the student a practical overview of the main tools used for the programming of classical web applications, interactive web applications (social networking applications) and mobile applications. In order to achieve this goal the student will learn how to use the basic programming tools of the Internet technologies, those tools will include different techniques for the programming of HTTP connections as RESTful Web Services or WebSockets, the programming with Servlets and the programming using the Android platform. Complementary, the student will learn the programming to access to relational data bases in order to implement the persistence of, for instance, a social networking service.
The scope of the course is mainly practical, most of the time the student will be working on the programming of a sequence of specific exercises according to the concepts introduced by the different units composing the content of the course.

Learning results of the subject:

- The skills for the programming of classical web applications, interactive applications (social networking applications) and mobile applications.
- The skills to be able to design and implement the presently known as social networking services like: Twitter, Facebook or WhatsApp.

<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group:</th>
<th>Hours small group:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total learning time: 125h</td>
<td>26h</td>
<td>13h</td>
<td>86h</td>
</tr>
<tr>
<td></td>
<td>20.80%</td>
<td>10.40%</td>
<td>68.80%</td>
</tr>
</tbody>
</table>
# Content

## 1. Introduction

**Learning time:** 7h  
Theory classes: 2h  
Laboratory classes: 1h  
Self study: 4h

**Description:**  
Introduction to distributed programming and to the web technologies. Fundamentals of the HTTP protocol.

## 2. Web applications

**Learning time:** 21h  
Theory classes: 6h  
Laboratory classes: 3h  
Self study: 12h

**Description:**  
Programming web applications with Servlets.  
Programming the access to data bases.  
Design of web applications based on the Model-View-Controller pattern.

## 3. Interactive applications

**Learning time:** 35h  
Theory classes: 10h  
Laboratory classes: 5h  
Self study: 20h

**Description:**  
Programming blackboard applications.  
Programming with RESTful services.  
Programming instant messaging applications.  
The publisher-subscriber pattern.  
Programming with WebSockets.

## 4. Mobile applications

**Learning time:** 35h  
Theory classes: 10h  
Laboratory classes: 5h  
Self study: 20h

**Description:**  
Fundamentals of programming with Android: the user interface, the multi-thread approach, programming the communication with the server, broadcast receivers, services, the push service.
Qualification system

The student will be assessed with the marking of 4 basic programming exercises, those exercises are devoted to the three main units encompassing the content of the subject.

The student will work on those exercises during the laboratory sessions, but she will have to devote some extra time to finish their programming at home.

Each of the 4 exercises will count for 25% of the final marks.

Bibliography

Basic:
