

230614 - DSIT - Distributed Systems, Internet and Web Technologies

Coordinating unit:	230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit:	744 - ENTEL - Department of Network Engineering
Academic year:	2019
Degree:	MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional) MASTER'S DEGREE IN INFORMATION AND COMMUNICATION TECHNOLOGIES (Syllabus 2009). (Teaching unit Optional) MASTER'S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Teaching unit Optional)
ECTS credits:	5
Teaching languages:	English

Teaching staff

Coordinator: JUAN LUIS GORRICHÓ

Others: JUAN LUIS GORRICHÓ
MARCEL FERNANDEZ

Degree competences to which the subject contributes

Specific:

1. Ability to model, design, implement, manage, operate, administrate and maintain networks, services and contents
2. 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:

3. 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.
4. 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.

Teaching methodology

- Lectures.
- Laboratory sessions.
- Individual work at home (homework).

Learning objectives of the subject

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

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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.

Study load

Total learning time: 125h	Hours large group:	26h	20.80%
	Hours medium group:	0h	0.00%
	Hours small group:	13h	10.40%
	Guided activities:	0h	0.00%
	Self study:	86h	68.80%

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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: 12h Laboratory classes: 3h Self study : 6h
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.	

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Planning of activities

LABORATORY

Description:

Continuous assessment of laboratory exercises to develop along the course.

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:

Tanenbaum, A.S.; van Steen, M. Distributed systems: principles and paradigms. 2nd ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2007. ISBN 0136135536.

Coulouris, G.F. Distributed systems: concepts and design. 5th ed., int.ed. Harlow: Addison-Wesley/Pearson Education, 2012. ISBN 9780273760597.