

230020 - AST - Network Applications and Services

Coordinating unit:	230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit:	744 - ENTEL - Department of Network Engineering
Academic year:	2019
Degree:	BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan, Spanish

Teaching staff

Coordinator:	Cotrina Navau, Josep
Others:	Oller Tejjón, Francesc Gorricho Moreno, Juan Luis Fernández Muñoz, Marcel Forga Alberich, Jordi Cotrina Navau, Josep Martin Escalona, Israel Rojas Espinosa, Alfonso

Requirements

INTRODUCTION TO TELEMATIC NETWORKS -
Prerequisite

Degree competences to which the subject contributes

Generical:

12 CPE N2. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

Teaching methodology

Lectures
Laboratory sessions
Group work (non-classroom)
Individual work (non-classroom)
Homework exercises
Short tests (Control)
Conventional tests (Final exam)

Learning objectives of the subject

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To acquire a global perspective of the basic concepts involving Telematic applications and services. To identify the main concepts for the design of Telematic applications, basically those related to the programming of multithread systems for the nodes participating on the designed approach, and the programming of the communication among those threads executing on the distant nodes. To identify the features of the communication channel at the transport layer. To understand the control mechanisms for the transmitted data among the participating nodes assuring a given quality of service.

Study load

Total learning time: 150h	Hours large group:	39h	26.00%
	Hours small group:	26h	17.33%
	Self study:	85h	56.67%

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Content

Streams I/O	Learning time: 11h 32m Theory classes: 3h Laboratory classes: 2h Self study : 6h 32m
Description: learning of Java I/O streams	
Containers, stacks and queues	Learning time: 23h 05m Theory classes: 6h Laboratory classes: 4h Self study : 13h 05m
Description: Java stacks and queues programming	
Threads	Learning time: 11h 32m Theory classes: 3h Laboratory classes: 2h Self study : 6h 32m
Description: Threads in Java	
Introduction to concurrency	Learning time: 14h 32m Theory classes: 6h Laboratory classes: 2h Self study : 6h 32m
Description: Introduction to concurrency. Mutual exclusion problem	



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Monitors	Learning time: 11h 32m Theory classes: 3h Laboratory classes: 2h Self study : 6h 32m
Description: Monitors: producers/consumers, readers/writers	
Message passing	Learning time: 23h 05m Theory classes: 6h Laboratory classes: 4h Self study : 13h 05m
Description: Client/Server. Stub/Skeleton	
Implementation of transport protocols	Learning time: 57h 42m Theory classes: 15h Laboratory classes: 10h Self study : 32h 42m
Description: Multiplexing/demultiplexing. Flow control. Connection/datagram oriented. Errors and losses	

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Planning of activities

(ENG)Exercicis

(ENG)Proves de resposta curta (Control)

(ENG)Pràctica de laboratori

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(ENG)Pràctica de laboratori

(ENG)Pràctica de laboratori

(ENG)Proves de resposta llarga (Examen Final)

Qualification system

Laboratory marks: 25%

Continuous assessment marks: 15%

Final exam marks: 60%

In this subject the following general competencies will be assessed:

- Third language (Medium Level)
- Experimentality and knowledge of instruments (Medium Level)

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Bibliography

Basic:

Kurose, J.F.; Ross, K.W. Computer networking: a top-down approach [on line]. 6th ed. Boston: Pearson, 2017 [Consultation: 25/10/2018]. Available on: <<https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=5187270>>. ISBN 9781292153599.

Comer, D.E. Internetworking with TCP/IP: vol.1: principles, protocols and architecture. 6th ed. Upper Saddle River: Prentice-Hall International, 2014. ISBN 9780136085300 (V.1).

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

Complementary:

Andrews, G. R. Foundations of multithreaded, parallel, and distributed programming. Reading, Mass. [etc.], USA: Addison-Wesley, 2000. ISBN 0201357526.