UNIVERSITAT POLITÈCNICA
DE CATALUNYA
UPC
BARCELONATECH

Course guide
300042 - DSA - Service and Application Design

Last modified: 01/06/2023

Unit in charge:	Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit:	701 - DAC - Department of Computer Architecture.
	744 - ENTEL - Department of Network Engineering.

Degree:	BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Compulsory subject).
	BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
	BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2023   **ECTS Credits:** 10.0   **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Definit a la infoweb de l'assignatura.

Others: Definit a la infoweb de l'assignatura.

PRIOR SKILLS

· Basic knowledge of object oriented programming language
· Basic skills in programming
· Knowledge of transport and application layer protocols

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. CE 23 TEL. Capacidad de construir, explotar y gestionar servicios telemáticos utilizando herramientas analíticas de planificación, de dimensionado y de análisis.(CIN/352/2009, BOE 20.2.2009.)
2. CE 26 TEL. Capacidad de diseñar arquitecturas de redes y servicios telemáticos. (CIN/352/2009, BOE 20.2.2009.)

Generical:
5. PROJECT MANAGEMENT - Level 3: Define the objectives of an extensive project and open, multidisciplinary. Schedule tasks and resources, track and integration of the parties. To evaluate the intermediate and final results, restating the objectives if necessary.
8. EFFICIENT USE OF EQUIPMENT AND INSTRUMENTS - Level 1: Using instruments, equipment and software from the laboratories of general or basic use. Realising experiments and proposed practices and analyzing obtained results.

Transversal:
3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
4. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
6. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
7. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
9. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

TEACHING METHODOLOGY

Course applies the following methodologies:
· Autonomous learning
· Cooperative learning
· Project based learning
· Autoevaluation
· Laboratory

LEARNING OBJECTIVES OF THE SUBJECT

· Intermediate Java skills
· Use and design of relational databases
· Design and development of RESTful web services
· Design and development of Android Applications
· Design and development of web user interfaces with HTML5 and jQuery
· Real project design and development

STUDY LOAD

Type	Hours	Percentage
Hours small group	70,0	28.00
Guided activities	40,0	16.00
Self study	140,0	56.00

Total learning time: 250 h

CONTENTS

Introduction to Java development with Maven and Git

Related activities:
(ENG) 1

Full-or-part-time: 3h
Laboratory classes: 3h

Version Control with Git

Related activities:
(ENG) 1

Full-or-part-time: 8h
Guided activities: 3h
Self study : 5h

Java basics

Description:
(ENG) 3.1 Direccions IP, URLs i URIs
3.2 Sockets per a clients
3.3 Sockets per a servidors
3.4 Datagrames i sockets UDP
3.5 Sockets multicast
3.6 Connexions URL
3.7 Apache HttpClient

Related activities:
(ENG) 1

Full-or-part-time: 36h
Guided activities: 6h
Self study : 30h

Databases and JDBC

Related activities:
(ENG) 1

Full-or-part-time: 12h
Laboratory classes: 4h
Guided activities: 3h
Self study : 5h

Java Web Applications with Servlets and JSP

Description:
(ENG) 5.1 Configuració de l'entorn de desenvolupament
5.2 Projectes Android
5.3 Activitats
5.4 Disposicions basades en XML
5.5 Controls bàsics
5.6 Internacionalització
5.7 Persistència
5.8 Comunicacions via HTTP
5.9 Concurrència

Related activities:
(ENG) 1

Full-or-part-time: 21h
Laboratory classes: 8h
Guided activities: 3h
Self study : 10h

RESTful web services

Related activities:
(ENG) 1

Full-or-part-time: 54h
Laboratory classes: 15h
Guided activities: 9h
Self study : 30h

Web user interfaces with Bootstrap and jQuery

Related activities:
(ENG) 1

Full-or-part-time: 28h
Laboratory classes: 10h
Guided activities: 3h
Self study : 15h

Android development introduction

Full-or-part-time: 28h
Laboratory classes: 10h
Guided activities: 3h
Self study : 15h

Project

Full-or-part-time: 60h
Laboratory classes: 20h
Guided activities: 10h
Self study : 30h

ACTIVITIES

(ENG) TÍTOL ACTIVITAT 1: PROJECTE

Full-or-part-time: 250h
Laboratory classes: 75h
Guided activities: 35h
Self study: 140h

GRADING SYSTEM

The weights to calculate the final qualification are:
· Deliver in time the course tasks (10%)
· Exams(40%)
· Project(40%)
· Attitude and involvement (10%)

The task delivery is evaluated with the maximum between the exams qualification and project qualification if all the tasks have been delivered in time, and with zero if not.

The project is evaluated with an average group qualifications. Students divide the qualification in such a way that the final average is equal to the average qualification given by the teachers.

BIBLIOGRAPHY

Basic:
- Murphy, Mark L. Beginning Android 2 [on line]. New York: Apress, 2010 [Consultation: 26/07/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=646345. ISBN 9781430226291.
- Eckel, Bruce. Thinking in Java. 4th ed. Upper Saddle River: Prentice Hall, 2006. ISBN 0131872486.

Complementary:
- Hashimi, Sayed Y; Komatineni, Satya; MacLean, Dave. Pro Android 2 [Recurs electrònic] [on line]. New York: Apress, cop. 2010 [Consultation: 26/07/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=602774. ISBN 9781430226604.
- Harold, Elliotte Rusty. Java networking programming : developing networked applications. 4th edition. Sebastopol: O'Reilly, 2014. ISBN 9781449365950.
- Oaks, Scott; Wong, Henry. Java threads [on line]. 3rd ed. Cambridge [etc.]: O'Reilly, 2004 [Consultation: 26/07/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=540609. ISBN 0596007825.
- Northover, Steve; Wilson, Mike. SWT, the standard widget toolkit. Boston [etc.]: Addison-Wesley, 2004-. ISBN 0321256638.