Universitat de Lleida

DEGREE CURRICULUM

ICT PROJECT: DEVELOPMENT AND IMPLEMENTATION

Coordination: CORES PRADO, FERNANDO

Academic year 2022-23

ICT PROJECT: DEVELOPMENT AND IMPLEMENTATION 2022-23

Subject's general information

Subject name	ICT PROJECT: DEVELOPMENT AND IMPLEMENTATION
Code	103086
Semester	1st Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Master's Degree in Informatics Engineering	1	COMPULSORY	Attendance-based

Course number of credits (ECTS)	9
Type of activity, credits, and groups	

Activity type	PRALAB	TEORIA
Number of credits	6	3
Number of groups	1	1

Coordination	CORES PRADO, FERNANDO
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING
Teaching load distribution between lectures and independent student work	9 ECTS = 25x9 = 225 hours 30% -> 67,5 classroom hours 70% -> 157,5 hours of autonomous student work
Important information on data processing	Consult this link for more information.
Language	English

ICT PROJECT: DEVELOPMENT AND IMPLEMENTATION 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
CORES PRADO, FERNANDO	fernando.cores@udl.cat	0	
PIÑOL ESTEBAN, XAVIER	xavier.pinol@udl.cat	4,5	
SPAIMOC , RADU-IONUT	radu.spaimoc@udl.cat	4,5	

Subject's extra information

To follow this subject is essential that students have good skills on Java programming. In the course it is assumed that **students are able to design, develop and debug sequential applications of medium difficulty**.

Learning objectives

- Understand what characteristics and requirements have an ICT project.
- Know and identify the major components of an ICT project.
- Know how to develop an ICT project throughout its life cycle
- Being able to determine the feasibility of an ICT project.
- Develop and validate mobile applications according to criteria of quality and efficiency.
- Being able to configure a DataSource in an application server.
- Develop SOAP web services.
- Develop REST web services.

Competences

General Competences:

- CG1. Capacity to project, calculate and design products, processes and installations in all fields of Computer Engineering.
- CG3. Capacity to manage, plan and supervise multidisciplinary teams.
- CG7. Capacity to implement and manage computer equipment manufacturing processes, guaranteeing personal and material safety, the final quality of products and their homologation.
- CG8. Capacity to apply the knowledge acquired for solving problems in new and unfamiliar situations within broader and more multidisciplinary contexts, and to be capable of integrating this knowledge.

Strategic Competences of UdL:

- UdL1. Appropriate skills in oral and written language.
- UdL3. Mastering ICT's.

Cross-disciplinary Competences

- EPS1. Capacity of planning and organizing the personal work.
- EPS4. Capacity to conceive, design and implement projects and/or contribute to new solutions, using

engineering tools.

Basic Competences:

- CB2. Capacity to apply the knowledge acquired for solving problems in new and unfamiliar situations within broader and more multidisciplinary contexts, and to be capable of integrating this knowledge.
- CB4.Students can communicate their conclusions - and the knowledge and rationale underpinning these, to specialist and non - specialist audiences clearly and unambiguously

Specific Competences:

- CE1. Capacity to integrate computer technologies, applications, services and systems, in general and in broader and multidisciplinary contexts.
- CE2. Capacity to strategically plan, elaborate, manage, coordinate, and technically and economically manage in areas related to computer engineering, in compliance with quality and environmental criteria. These areas include systems, applications, services, networks, computer infrastructure, installations, software development, and multidisciplinary work contexts.
- CE4. Capacity to model, design and define architecture, as well as implant, manage, operate, administrate and maintain applications, networks, systems, services and computer contents.
- CE5. Capacity to understand and apply the function and organization of the Internet and the technologies and protocols of new generation networks, component models, intermediary software and services.
- CE8. Capacity to analyse the needs of information in an environment and carry out the construction of an information system in all its stages.
- CE9. Capacity to design and evaluate operating systems and servers, as well as applications and systems based on distributed computing.

Subject contents

Block I. Methodology of User Centred Design from an early stage

1. **Technical Inquiry Focus Group**

Block II. Android Application Development

1. **Introduction to Android**
2. **Developing app's**
3. **Intents, services and multitasking on Android**
4. **Persistent Data Android**
5. **Sharing information on Android**
6. **6. Other aspects of Android**

Block III. Web Services.

7. **Service-oriented architectures (SOA).**

    7.1. Enterprise Applications.

    7.2. JBoss Application Server

    7.3. Java Script Object Notation (JSON).

    7.4. Web Services

Block IV. Integration of Android with Web Services.

8. **Web Services Android**

    8.1. Http basic networking

    8.2. Parsing XML and JSON

    8.3. Using REST Web Services

Methodology

The methodology used in the course is based on **project-based learning**. This method consist on that a group of students develops a real ICT project (from the proposal of the idea to final deployment and distribution). In this way the student will become the main protagonist of his learning, being responsible for deciding the final product and the knowledge/skills needed to achieve the project objectives.

Using this model, the aim is to encourage the acquisition of skills and competencies (teamwork, research skills, critical thinking, leadership, etc.) at the same time that the knowledge of the subject is assimilated.

In this course, the objective of the project will involve the design, development and deployment / distribution of an Android application that uses Web Services for seamless access to data servers. The students themselves will be proposed to make the application. Upon project completion, the application must be functional in all major aspects and be published in the Google Play market.

It is an **integrated project** in which they are developed many of the skills of three subjects.

- The three subjects involved are: ICT Project: Development and implementation, project management and evaluation techniques and user testing (located in the 2nd semester).

To implement the project, at the beginning of the course, students must form a team (3-4 people), in which two main roles will be identified:

- Team Leader or Project Manager. It is responsible for planning and assigning tasks to each of the team members during the period of time that is responsible. It will also be responsible for planning meetings and work sessions that are needed to carry out the defined tasks.
- Team Member. The other members of the project team are responsible for developing the different tasks that are planned at each stage of the project life cycle. Of course, the project manager is also considered a team member for all purposes (assignments and tasks).

The classes will be used to introduce and practice the concepts of the course, group work sessions, presentation sessions and evaluation work and other activities related to the project.

Development plan

Course Schedule - IC Project: "Development and implementation" and "IT Project Management"

Week	Content
1	"Team Building Week"
2	Preentation + Idea Development
3	Workshop preparation + Workshop "Projectes Presentaction"
4	Workshop "Projectes Presentaction" + Making groups + ITPMM + PTIC

Week	Content
5	PTIC + Sprint Planning + ITPM
6	PTIC + Sprint preparation + ITPM
7	PTIC + Sprint Review + Retrospective
8	PTIC + Spring planning + ITPM
9	PTIC + Sprint preparation + ITPM
10	PTIC + Sprint Review + Retrospective
11	Mentoring + Sprint planning + PTIC + ITPM
12	Sprint preparation + PTIC + ITPM
13	PTIC + ITPM + Sprint Review + Retrospective
14	Mentoring + Final Projecte
15	Final Presentation

Evaluation

Group Qualification Result: 60% of final remark.

Evaluation Point	Percentage	Description
Sprint 1	12,5%	- Project Management Evaluation. - “Sprint Planning” and “Sprint Review” evaluation. - Implemented code and features general evaluation.
Sprint 2	12,5%	- Project Management Evaluation. - “Sprint Planning” and “Sprint Review” evaluation. - Implemented code and features general evaluation.
Sprint 3	12,5%	- Project Management Evaluation. - “Sprint Planning” and “Sprint Review” evaluation. - Implemented code and features general evaluation.
Presentación final	22,5%	- Evaluation of student’s oral and presentation skills. - Commercial presentation of the project. - Presentation quality in terms of coherence and content.

Individual Result: 40% of the final remark.

Evaluation Point	Percentage	Description
Workshop	10%	- Workshop attendance; - Participation in the workshop by elaborating ideas.
Peer Review	10%	- Evaluation of the peer review. - Evaluation of problems found/corrected. - Evaluation of conflicts found/correct.
Implication/Participation in the project.	10%	Active participation in the project. (measured by commits and resolved tasks).

Technical Evaluation	10%	Evaluation of the project management, cost assessment and product development concepts that should be learn during the project.

Bibliography

Basic Bibliography:

- Ian F. Darwin, “Android Cookbook”, O’Reilly, 2012.
- Erik Hellman, “Android Programming: Pushing the Limits”, Wiley, 2014.
- Dave Smith, “Android Recipes: A Problem-Solution Approach for Android 5.0”, Apress, 2015.

Extended Bibliography:

- Reto Meier, “Professional Android 4 Application Development”John Wiley & Sons, 2012.
- Charlie Collins, Michael D. Galpin, and Matthias Kaeppler, “Android in Practice”, Manning, 2011.