Course guide
340453 - DAMO-I7P23 - Mobile Application Development

Last modified: 08/04/2024

Unit in charge:	Vilanova i la Geltrú School of Engineering
Teaching unit:	723 - CS - Department of Computer Science.

Degree: BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2018). (Optional subject).

Academic year: 2024   **ECTS Credits:** 6.0   **Languages:** Catalan

LECTURER

Coordinating lecturer: Alejandro Ríos

Others: Alejandro Ríos

PRIOR SKILLS

Basic knowledge about Java programming language.
Knowledge about OOP (Object Oriented Programming).
Being able to understand diagrams of classes and sequence.
Indispensable: having a laptop with at least 4Gb of RAM storage.
Advisable: having an Android device

REQUIREMENTS

knowledge about JAVA programming language
Knowledge about programming driven by objects

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
2. CEFC1. Ability to design, develop, select and value applications and informatic systems affirming its reliability, security and quality corresponding to ethical principals and legislation and current rules.
3. CEFC17. Ability to design and evaluate computer interfaces that guarantee accessibility and usability of informatic systems, services and applications.
4. CEFC8. Ability to analyze, to design, to construct and to maintain applications in a well built, secure and efficient way choosing the most adequated paradigms and languages.
5. CEIS4. Ability to identify and analyze problems and design, develop, deploy, test and document software solutions based on an adequate knowledge of theories, models and techniques.
1. CESI3. Ability to actively participate in the specification, design, implementation and maintenance of information and communication systems.
14. CETI3. Ability to set up methodologies focused on user and development organization, valuation and application management and systems based on information technologies which secure ergonomic accessibility and use of
I_CETI6. CETI6. Ability to design systems, applications and services based on network technologies, including internet, website, e-commerce, multimedia, interactive services and mobile computing.

Transversal:

6. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

7. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

8. 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.

9. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

10. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.

12. EFFECTIVE USE OF INFORMATI0N RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

13. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

TEACHING METHODOLOGY

Classes will be given in Catalan.
This is a mainly practical course, as students will be working with their computers under the professor's guidance.
Students are regarded as the main responsible of their own learning.
The course comprises two main periods, with the first one lasting a 60% of it, and the second one a 40%, approximately.
During the first period of the course, the teacher introduces training pills on different aspects of the Android operating system and its programming in Java and then proposes exercises to be delivered.
During the second period of the course, a team project is developed using the ABP methodology. In each class, the teacher evaluates the work of the students and supports them to advance in their project.

LEARNING OBJECTIVES OF THE SUBJECT

Being able to build an application for a mobile device.
Understanding the environment and implications of building for mobile devices.
Being able to seek and find the necessary information during the development process when required.
Adquiring the skills necessary to stay updated and adapt in such a fast-changing career.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Hours small group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

Introduction, installation of Android Studio and first app

Description:
Know the current moment in terms of mobile OS, types of devices, development tools and create the first simple app.

Specific objectives:
What is Android and what is its competency context
Install Android and work with a development tool.
Create the first simple app.

Full-or-part-time: 2h
Theory classes: 2h

Interfaces and events

Description:
How to create interfaces and how to inter communicate the different elements through the programming of events.

Specific objectives:
Estructure of an Android application
Interface elements
The class R
The layouts

Related activities:
Creating a simple game with colors

Full-or-part-time: 8h
Theory classes: 4h
Self study : 4h

Multimedia

Description:
How to use multimedia elements in an Android application

Specific objectives:
Resources Manager
Images
Sounds
The MediaPlayer class
The SoundPool class

Related activities:
Implementation of an app with images, sounds and music

Full-or-part-time: 6h
Theory classes: 1h
Self study : 5h

Databases with Android

Description:
How to manage data with a database in Android

Specific objectives:
SQLite
Recycler View

Full-or-part-time: 2h
Theory classes: 2h

Activities and fragments

Description:
Build activities with fragments and connect activities with other activities

Specific objectives:
Lifecycle of activities
Intents. Mechanisms for passing messages
Solving and filtering intents

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

Access to API's

Description:
Implementation of applications that access to REST API's with JSON

Related activities:
Creating a simple app that accesses a REST API

Full-or-part-time: 5h
Theory classes: 3h
Self study : 2h

Final project

Description:
Development of a final project that incorporates APIs and databases

Specific objectives:
Develop a team project using the ABP methodology

Full-or-part-time: 26h
Guided activities: 26h

ACTIVITIES

Delivery exercise 1

Full-or-part-time: 4h
Self study: 4h

Delivery exercise 2

Full-or-part-time: 6h
Self study: 6h

Delivery exercise 3

Full-or-part-time: 10h
Self study: 10h

Final project

Description:
A team app is developed by putting into practice the knowledge and skills acquired during the course. It will also be necessary to acquire new knowledge and know how to work cooperatively with the other members of the team

Delivery:
During the last days of the course or an ulterior meeting

Full-or-part-time: 28h
Laboratory classes: 16h 40m
Self study: 11h 20m

GRADING SYSTEM

80% attendance is required in order to have the right to evaluation.
The evaluation of the exercises of the first period is worth 60% of the overall grade.
The project carried out in class during the second period of the course and attendance are worth 40% of the overall grade.

EXAMINATION RULES.

Individual work and teamwork.
Code cleanliness and originality is valued
The ability to search for information and find solutions for oneself is valued
An active and participatory attitude is expected from students.

BIBLIOGRAPHY

Basic:
- MacLean, Dave; Komatineni, Satya; Allen, Grant. Pro Android 5 [Recurs electrònic] [on line]. 5th ed. Berkeley: Apress, 2015 [Consultation: 05/05/2020]. Available on: https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=2093705. ISBN 9781430246817.

Complementary:

- Meier, Reto. Professional Android 4 application development. Indianapolis: John Wiley & Sons, 2012. ISBN 9781118262153.