Course guide
340453 - DAMO-I7P23 - Mobile Application Development

Last modified: 30/06/2023

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: 2023   **ECTS Credits:** 6.0   **Languages:** Catalan

LECTURER

Coordinating lecturer: Guillem Godoy

Others: Guillem Godoy

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 INFORMATION 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 English, but students can ask questions in Spanish or 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 70% of it, and the second one a 30%, approximately.

Over the first period of the course, at each class, the professor solves a practical case, and the students are asked to extend it in a sensible way. The lecturer assesses their accomplishment over the class and what they have been able to fulfil in addition at home.

Over the second period of the course, each student develops a personal project consisting of an Android app. At each class, the professor gives support by providing with his viewpoint and knowledge.

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

(ENG) Analisys of the state-of-the-art

Description:
(ENG) Knowing the current state regarding mobile OS, sort of devices and development tools

Specific objectives:
(ENG) What is Android, which is its competential context.
Understand the difference between multiplatform and native apps.

Full-or-part-time: 1h
Theory classes: 1h

(ENG) Android architecture and Google univers

Description:
(ENG) We need to understand the platform we are working on, what kind of support if the OS giving us, and what that has to do with other services

Specific objectives:
(ENG) Internal structure of Android Os
Development tools and market platform
Google services and apis

Related activities:
(ENG) Installation of development tools

Full-or-part-time: 7h
Theory classes: 5h
Self study : 2h

Architecture of an Android app

Description:
Understanding the basic structure of an Android app

Specific objectives:
Manifest
XML Descripcions
Links between Java and XML: the R class
MVC pattern and its nuances in Android

Related activities:
Several programming activities
Project part

Full-or-part-time: 23h
Theory classes: 6h
Guided activities: 9h
Self study : 8h

Programming of interfaces

Description:
How to program Android interfaces

Specific objectives:
(ENG) Widgets view
Adapters
Conventions and styles

Related activities:
daily practice and the project

Full-or-part-time: 31h
Theory classes: 12h
Guided activities: 12h
Self study : 7h

Activities

Description:
Understanding the flow of processes and user's view

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

Related activities:
daily practice and the project

Full-or-part-time: 22h
Theory classes: 6h
Guided activities: 8h
Self study : 8h

Observer pattern

Description:
Observer pattern and its Java implementation

Specific objectives:
Understanding why we use this pattern

Understanding some good programming practices

Related activities:
The daily practice and the project

Full-or-part-time: 30h
Practical classes: 6h
Guided activities: 12h
Self study : 12h

MVC

Description:
Presentation and implementation of the Model-View-Controller pattern

Specific objectives:
Understanding why we have and use the MVC

Being able to implement the MVC

Full-or-part-time: 36h
Theory classes: 12h
Guided activities: 12h
Self study : 12h

ACTIVITIES

Extending daily implementations done by the professor

Description:
The students will have to spend personal time to finish the extensions of the implementations carried out at the classroom

Delivery:
During subsequent classes

Related competencies :
07 AAT N3. 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.
07 AAT N1. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.
07 AAT N2. 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.

Full-or-part-time: 13h 20m
Self study: 13h 20m

Final project

Description:
The student develops an app of their choice trying to apply the knowledge and skills acquired along the course.

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

Full-or-part-time: 16h 40m
Self study: 16h 40m

GRADING SYSTEM

At least a 75% of attendance is required in order to gain the right of being assessed.
The attendance, and especially the work done at class and at home over the first period worths the 40% of the final grade.
The assessment of the developed project over the second period, considering not only the final result but also the development process, worths the 60% of the final grade.

EXAMINATION RULES.

Individual work (exceptions to this rule can be accepted)
A sensible, clear and well-structured code will be especially weighed up
Capabilities of looking for information and finding solutions on their own will be appreciated, too
A proactive and participative 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.