COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001

INTERNATIONAL
CAMPUS OF
EXCELLENCE

POLITÉCNICA

E.T.S. de Ingenieros
Informaticos

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000868 - Mobile Applications Development

DEGREE PROGRAMME

10AZ - Master Universitario en Innovación Digital

ACADEMIC YEAR & SEMESTER

2019/20 - Semester 1

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Learning guide

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1. Description

1.1. Subject details

Name of the subject	103000868 - Mobile Applications Development
No of credits	4.5 ECTS
Type	Optional
Academic year ot the programme	Second year
Semester of tuition	Semester 3
Tuition period	September-January
Tuition languages	English
Degree programme	10AZ - Master Universitario en Innovación Digital
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2019-20

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Sergio Paraiso Medina	2306	sergio.paraiso@upm.es	Sin horario.
Raul Alonso Calvo (Subject coordinator)	2315	raul.alonso@upm.es	M - 10:00 - 13:00 W - 10:00 - 13:00

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

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3. Prior knowledge recommended to take the subject

3.1. Recommended (passed) subjects

The subject - recommended (passed), are not defined.

3.2. Other recommended learning outcomes

- Programming skills, and object-oriented programming

- Elementary knowledge of web programming and web services

4. Skills and learning outcomes *

4.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CB10 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

CE-CD09 - Capacidad para explorar formas de utilizar nuevas herramientas y técnicas de ciencia de datos con una mentalidad empresarial para enfrentar los desafíos empresariales y organizativos con una mentalidad empresarial

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4.2. Learning outcomes

RA26 - Evaluate and implement systems that use accessibility APIs

RA21 - Implement basic interactive android applications

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

5. Brief description of the subject and syllabus

5.1. Brief description of the subject

This course introduces the fundamentals of programming techniques for mobile devices, more concretely to android basics development. Students will learn how to design and implement mobile applications following user interfaces design good practices, and how user interface systems are integrated with mobile operating system.

The course will focus on prototyping and development of simple graphical user interfaces (GUI) using rapid development tools such as graphical user interface layout editors combined with simple code to create functioning interfaces.

The course focuses on practice the skills needed for development of user interfaces to be deployed on Android mobile platform.

Concretely, students will learn to use technologies from mobile applications:

- Basics on GUI, such as event-driven programming, or design patterns, like Model-View-Controller (MVC).

- Basics on client-server communications and web communications.

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- Android framework and development, including system interaction, application states, layout generation, basic UI components.

5.2. Syllabus

1. Introduction to Android platform

2. Android Acivity lifecicle

3. Android Intents

4. Android UI layouts and components

    4.1. Layout basic design

    4.2. Developing UI in Android

5. Services

6. Broadcast receivers

7. Introduction to data persistence features in Android

    7.1. Application preferences

    7.2. File system

    7.3. Content providers

8. Accessing web services using JSON

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6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1	**Introduction to Android platform** Duration: 02:00			
2	**Android project tools and project structure** Duration: 01:00	**Android project tools and project structure** Duration: 01:00		
3	**Activity** Duration: 01:00	**Activity** Duration: 01:00		
4	**Intents** Duration: 01:00	**Intents** Duration: 01:00		**Project proposal** Continuous assessment and final examination Duration: 03:00
5	**Data exchange in activities** Duration: 01:00	**Data exchange in activities** Duration: 01:00		
6	**Basic UI components** Duration: 00:30	**Basic UI components** Duration: 01:30		
7	**Services** Duration: 00:30	**Services** Duration: 01:30		
8		**Prototype design** Duration: 02:00		**Prototype design** Continuous assessment and final examination Duration: 03:00
9	**Broadcast receivers** Duration: 00:30	**Broadcast receivers** Duration: 01:30		
10	**Persistence** Duration: 00:30	**Persistence** Duration: 01:30		
11		**Persistence** Duration: 02:00		
12	**Accessing web services** Duration: 01:00	**Accessing web services** Duration: 01:00		

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13		**Prototype implementation** Duration: 02:00		
14		**Prototype implementation** Duration: 02:00		
15				**Application prototype** Continuous assessment and final examination Duration: 03:00 **Pupil portfolio presentation** Continuous assessment and final examination Duration: 04:30
16				
17				

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The subject schedule is based on a previous theorical planning of the subject plan and might go to through experience some unexpected changes along throughout the academic year.

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7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
4	Project proposal		Face-to-face	03:00	10%	5 / 10	CB10 CB06 CE-CD09
8	Prototype design		Face-to-face	03:00	10%	5 / 10	CE-CD09 CB10 CB06
15	Application prototype		Face-to-face	03:00	70%	5 / 10	CB06 CE-CD09 CB10
15	Pupil portfolio presentation		Face-to-face	04:30	10%	5 / 10	CE-CD09 CB06

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
4	Project proposal		Face-to-face	03:00	10%	5 / 10	CB10 CB06 CE-CD09
8	Prototype design		Face-to-face	03:00	10%	5 / 10	CE-CD09 CB10 CB06
15	Application prototype		Face-to-face	03:00	70%	5 / 10	CB06 CE-CD09 CB10
15	Pupil portfolio presentation		Face-to-face	04:30	10%	5 / 10	CE-CD09 CB06

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills

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Application prototype		Face-to-face	12:00	90%	5 / 10	CE-CD09 CB10 CB06
Pupil portfolio presentation		Face-to-face	02:00	10%	5 / 10	CE-CD09 CB06

7.2. Assessment criteria

This course is intended to be practical. iIt is encouraged that pupils bring their own laptop to follow laboratory classes.

All presentations and documents required in assignments should be written in English, as well as pupil's presentations.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Android Developers	Web resource	https://developer.android.com/
Android Studio	Others	Software
Android SDK	Others	Software
The Busy Coder's Guide to Android Development by Mark Murphy	Bibliography	https://commonsware.com/Android/Android_3 -3-CC.pdf
Web resources	Others	http://developer.android.com http://stackoverflow.com/questions/tagged/an droid https://groups.google.com/group/android- developers

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9. Other information

9.1. Other information about the subject

For attending this course, it is recommended that pupils bring a laptop with Android Studio software installed.