

COURSE DESCRIPTION – ACADEMIC YEAR 2016/2017

Course title	Mobile Systems Engineering
Course code	72128
Scientific sector	ING-INF/05
Degree	Master in Computer Science (LM-18)
Semester	1
Year	2
Credits	8
Modular	No

Total lecturing hours	48
Total lab hours	24
Total exercise hours	--
Attendance	Not compulsory
Prerequisites	Basic understanding of operating systems and object-oriented programming languages, such as C, C++, C#, Java. Basic knowledge of network protocols, software engineering and applications design.
Course page	https://ole.unibz.it/

Specific educational objectives	<p>The course belongs to the type "caratterizzanti – discipline informatiche" in the curriculum "Software Engineering and IT Management".</p> <p>The objective of this course is to provide a comprehensive knowledge regarding mobile systems. This will include mobile systems engineering, high and low levels of mobile operating systems, mobile services for the Android and other mobile platforms, mobiles systems security and best practices for building mobile apps.</p>
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Lecturer	Nabil El Ioini
Contact	Piazza Domenicani 3 , Room 1.08, nabil.elioini@inf.unibz.it , 0471-016138
Scientific sector of lecturer	ING-INF/05
Teaching language	English
Office hours	To be defined and published on the web page of the course.
Lecturing Assistant (if any)	--
Contact LA	--
Office hours LA	--

List of topics	<ul style="list-style-type: none"> • Mobile System Engineering concepts • Mobile System Engineering Life Cycle Management • Virtual and Abstract Machines • System Design and Implementation • Integration and Verification • Transition and Validation • Operation Maintenance and Support
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Teaching format	Frontal lectures, project in the lab.
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Learning outcomes	Knowledge and understanding:
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	<ul style="list-style-type: none"> • Know the main methods and techniques for designing, creating, and maintaining software products and services. • Know the most up-to-date development architectures for systems based on web and mobile technologies. <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> • Be able to design and implement information systems in vertical sectors of applications according to technical, functional and organizational requirements. • Be able to apply innovative methods for management and improvement of development processes in different application domains such web or mobile. • Be able to apply methods of verification and validation of software. <p>Making judgments</p> <ul style="list-style-type: none"> • Be able to identify reasonable work goals and estimate the resources required to achieve the objectives. <p>Communication skills</p> <ul style="list-style-type: none"> • Be able to structure and prepare scientific and technical documentation describing project activities. <p>Learning skills</p> <ul style="list-style-type: none"> • Be able to independently keep up to date with developments in the most important areas of Computer Science.
<p>Assessment</p>	<p>The assessment of the course consists of two parts:</p> <ul style="list-style-type: none"> • Written exam (50%); • Project (50%).
<p>Assessment language</p>	<p>English</p>
<p>Evaluation criteria and criteria for awarding marks</p>	<p>The students are required to implement a mobile application as a project. The application should include the topics covered during the lectures and labs. The output of the project are:</p> <ul style="list-style-type: none"> • a written report describing (problem statement, proposed solution, application design and architecture, functionality, development problems/solutions) • a working demo of the application • a project presentation <p>The goal of the project is to assess to which degree students have achieved the following learning outcomes: applying knowledge and understanding, making judgments, communication skills and ability to learn.</p> <p>The aim of the written exam is to assess to which degree students have achieved the learning outcomes concerning applying knowledge and understanding, making judgments, communication skills and ability to learn.</p>
<p>Required readings</p>	<ul style="list-style-type: none"> • Advanced Android™ Application Development, Fourth Edition, 2014 • Understanding the Linux Kernel, 3rd Edition, 2005 • Embedded Systems Design, Second Edition, Steve Heath, 2002 • Arduino Cookbook, Michael Margolis, 2012

<p>Supplementary readings</p>	<p>Online resources</p> <ul style="list-style-type: none"> • Android Developers, http://developer.android.com Additionally, the slides from the lectures will be available on the course web page. • Practical Model-Based Testing: A Tools Approach, Mark Utting, Bruno Legeard, 2010
<p>Software used</p>	<p>The following list includes some of the most important tools that we will use in the course:</p> <ul style="list-style-type: none"> • Eclipse • Android SDK • Android NDK • Arduino