

module title module code	level of module		year of study	semester/trimester when the module is delivered			
Mobile Computing and Applications Development IES-B3	MSc Level		1 st	SPRING semester			
Name / e-mail of lecturer(s)	Weekly Hours		ECTS	module type (comp., opt.)	mode of delivery (face to face, distance learning)		
Associate Prof. Charalampos Z. PATRIKAKIS bpatr@teipir.gr	Lect.	E- learning				4	2
module web Page	http://eclass.gunet.gr/courses/NETGU309/						
learning outcomes	<p>Upon successful completion of the course, the student possesses advanced knowledge, skills and competences that enable him/her to:</p> <ol style="list-style-type: none"> 1. Know and be able to distinguish among the different application development platforms for mobile and wearable devices and the particularities that programming context and situation aware applications have. 2. Understand the limitations in application programming for mobile devices in terms of processing power, memory and battery power. 3. Design applications for mobile and wearable devices, taking into account the limitations introduced by the nature of these devices. 4. Develop skills needed in application programming through the use of tools such as App Inventor 5. Implement applications through the use of SDKs such as android SDK 6. Acquire knowledge on and be able to perform evaluation of new technologies in the field of mobile computing and communications. 7. Be trained to efficiently plan and use mobile, pervasive computing and web technologies in order to serve the needs of mobile applications. <p>Keywords: Mobile devices, wearables, smartphones, programming, applications.</p>						
prerequisites and co-requisites:	None						
recommended optional programme components							
module description	<p><u>Lectures</u></p> <p><u>1 2 X 2 hours of lectures: Review of basic concepts and principles in programming</u></p>						

Quick review of basic principles of object oriented programming, using Java as a programming language. Presentation of topics in mobile and pervasive computing, context and situation awareness, PAN communications and platforms for mobile apps development.

2 3 X 2 hours of lectures including lab: Introduction to the App Inventor platform and to event-handling.

Introduction to App Inventor, installation, creation of a Portfolio, development of a first, simple application, presentation of testing and debugging environment.

3 3 X 2 hours of lectures including lab: Use of parameters, event control, graphics, video and gaming.

Introduction to timing, video, moving graphics and sprites making use of events control, use of variables and control statements.

4 3 X 2 hours of lectures including lab: Use of mobile and wearable devices context and situation awareness, and message exchange.

Introduction to SMS communication, location identification through the use of GPS, text to speech transformation and access to network services.

5 3 X 2 hours of lectures including lab: Data and information management for the implementation of news services.

Introduction to lists, pointers, static and dynamic data, web APIs and asynchronous communication.

6 2 X 2 hours of lectures including lab: Procedures.

Procedures, development and reuse.

7 2 X 2 hours of lectures including lab: User Data and generation and use.

User data generation, collection and use over the mobile devices and the web.

8 2 X 2 hours of lectures including lab: Design and architecture of applications, testing and debugging.

Design of mobile applications, implementation and calling of procedures, reuse of code, testing and debugging

9 2 X 2 hours of lectures: Mobile apps development platforms.

Presentation of free, commercial and research platforms for mobile application development supporting real time operation, context and situation awareness and unified network access.

10 3 X 2 hours of lectures: Programming mobile devices in Java

Presentation of tools and platforms (Eclipse, Android SDK, Android ADT, JDK), moving from App Inventor to Java-Eclipse

	<p><u>11 1 X 2 hours (presentation): Educational visit</u></p> <p>Educational visit to a company specializing in mobile apps development.</p>																
recommended or required bibliography:	<p><u>Recommended Books</u></p> <ul style="list-style-type: none"> • Android for Programmers: An App-Driven Approach, Paul Deitel, Harvey Deitel, Abbey Deitel, Prentice Hall, 2013 • App Inventor 2, David Wolber, Hal Abelson, Ellen Spertus, Liz Looney, Εκδότης: O'Reilly Media, 2014 																
planned learning activities and teaching methods:	<p><u>Learning Activities Plan</u></p> <table border="1"> <thead> <tr> <th>Learning activity</th> <th>Load (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>156</td> </tr> <tr> <td>Laboratory experiments</td> <td>24</td> </tr> <tr> <td>Student technical reports and programs on lab part</td> <td>24</td> </tr> <tr> <td>Student technical report and project on lecture part (possibly as a team member)</td> <td>48</td> </tr> <tr> <td>Study, design and implementation for the intermediate reports and final project evaluation</td> <td>16</td> </tr> <tr> <td>Educational visit</td> <td>2</td> </tr> <tr> <td>TOTAL COURSE LOAD</td> <td>270</td> </tr> </tbody> </table> <p><u>Teaching Methods Employed</u></p> <p>In parallel to the lectures covering the topics presented in the course curriculum, lab exercises and assignments will be given in order to provide hands on experience on the design and development of prototypes, testing and debugging and publishing of mobile applications.</p> <p>During the semester, a visit to a company that specializes in the design and implementation of mobile applications and tools will take place.</p>	Learning activity	Load (hours)	Lectures	156	Laboratory experiments	24	Student technical reports and programs on lab part	24	Student technical report and project on lecture part (possibly as a team member)	48	Study, design and implementation for the intermediate reports and final project evaluation	16	Educational visit	2	TOTAL COURSE LOAD	270
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assessment methods and criteria:	<p>Assessment methodology includes</p> <ul style="list-style-type: none"> • intermediate reports and small projects (individual assignments) delivered by the students during the semester, contributing 50% at the final grade, • a final project (in which up to two students could work in groups), delivered at the end of the semester, contributing 50% at the final grade. 																
language of instruction:	Greek & English																