COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF ELECTRONICS ENGINEERING		
LEVEL OF STUDIES	GRADUATE		
COURSE CODE	8002003	**SEMESTER**	2
COURSE TITLE	Mobile – Pervasive Computing and Applications		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	4	9
E-learning	2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Scientific Area
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.gunet.gr/courses/NETGU309/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of this course, the students possess advanced knowledge, skills and competences that enable them to:

1. Know, name and describe the different application development platforms for mobile and wearable devices and the particularities of programming context- and situation-aware applications.
2. Understand, explain and discuss 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. Use tools such as App Inventor Develop for application programming.
5. Implement applications through the use of SDKs such as the Android SDK and the IOS SDK

6. Evaluate and relatively assess new technologies in the field of mobile computing and communications.
7. Plan and efficiently use mobile, pervasive computing and web technologies in order to meet the needs of mobile applications.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Team work
- Production of free, creative and inductive thinking

(3) COURSE CONTENT

Lectures

1 2 X 2 hours of lectures: Review of basic concepts and principles in programming

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 unifed network access.

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

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

11 1 X 2 hours (presentation): Educational visit

Educational visit to a company specializing in mobile apps development.

In parallel to the lectures, lab practice and assignments are given in order to provide hands-on experience on the design and development of prototypes, testing and debugging and publishing of mobile applications.
During the semester, a visit to a company that specializes in the design and implementation of mobile applications and tools is organized.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>• Face to face lectures in class
• E-learning</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of electronic presentation with multimedia content in class,
• Student support through the course webpage and the departmental e-learning platform (moodle),
• Electronic communication of instructors and students, through the course webpage and by e-mail.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the</td><td>Lectures, lab practice, homework assignments / project, study.

<table><tr><th>Activity</th><th>Semester workload (hours)</th></tr><tr><td>Lectures</td><td>52</td></tr><tr><td>E-learning</td><td>26</td></tr><tr><td>Study lecture material</td><td>52</td></tr></table></td></tr>
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ECTS	Lab practice	26
	Report on lab practice	26
	Homework assignments or project and report (individual or group)	50
	Study and preparation for the exams	36
	Visit a company / production plant / institution	2
	Course Total	**270**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Assessment is based on: • intermediate reports and small projects (individual assignments) assigned during the semester, contributing 50% at the final grade, • a final project (group of up to two students), due at the end of the semester, contributing 50% at the final grade.

(5) ATTACHED BIBLIOGRAPHY

-Recommended Books

1. Paul Deitel, Harvey Deitel, Abbey Deitel, Android for Programmers: An App-Driven Approach, Prentice Hall, 2013
2. David Wolber, Hal Abelson, Ellen Spertus, Liz Looney, App Inventor 2, O'Reilly Media, 2014
3. Kevin J McNeish, Greg Lee, Benjamin J Miller, Sharlene M McNeish, Diving In - iOS App Development for Non-Programmers Series: The Series on How to Create iPhone & iPad Apps, Oak Leaf Enterprises 2012