

Academic Year: (2013 / 2014)

Review date: 14-05-2013

Department assigned to the subject: Department of Computer Science and Engineering

Coordinating teacher: ROMANO , MARCO

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming, Principles of Informatics Engineering, User Interfaces

OBJECTIVES

- ¿ General competencies
 - o Capability to analyze and synthesize (PO b)
 - o Capability to organize and plan (PO d)
 - o Problem solving (PO c)
 - o Teamwork (PO d)
 - o Capacity to apply theoretical concepts (PO c)
- ¿ Specific competences
 - o Cognitive (PO a)
 - ¿ Knowledge of ubiquitous computing elements
 - ¿ Knowledge of systems, architectures and applications for pervasive computing
 - ¿ The impact of ubiquitous computing on the society
 - ¿ Knowledge of ubiquitous computing design methods
 - o Procedural/Instrumental (PO a, c, e, i, k)
 - ¿ Developing of user interfaces for interactions in an ubiquitous environment
 - o Attitudinal (PO c, d, f)
 - ¿ Creativity
 - ¿ Quality concerns
 - ¿ Achievement motivation
 - ¿ Interesting for doing research and figuring out solutions to new problems
 - ¿ Communication abilities for divulging results to different audiences

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to Ubiquitous Computing
 - History and Definition
 - Interaction paradigms in an ubiquitous computing environment
 - Devices ecology
2. Mobile technologies
 - Mobile computing: introduction
 - Context awareness applications
 - Augmented reality techniques for mobile devices
3. Interactions in ubiquitous environments
 - Multi-touch interactions
 - Touchless technologies (Microsoft Kinect)
 - Tangible user interfaces
 - Rapid prototyping techniques aimed at ubiquitous environments
4. Future Prospects of ubiquitous computing

LEARNING ACTIVITIES AND METHODOLOGY

- ¿ Theoretical lectures: 1.5 ECTS (PO a)
 - Purpose: to achieve the specific cognitive competencies of the course.
 - Implementation: lectures in which theoretical concepts on ubiquitous computing are exposed.
- ¿ Practical lectures: 1.0 ECTS (PO a, c, e, k)
 - Purpose: to achieve the specific instrumental competences and develop attitudinal competences.
 - Implementation: labs in which technical issues related to the development of ubiquitous computing applications are exposed.

- ¿ Practical case: 2.0 ECTS (PO a, c, d, e, k)
 - Purpose: to develop both instrumental and attitudinal competencies.
 - Implementation: designing and implementing a practical case within a work group.
- ¿ Critical analysis of research papers: 1.0 ECTS (e, d, f, g)
 - Purpose: to deepen the knowledge of specific topics of the course.
 - Implementation: Students solve programming exercises of ubiquitous computing applications.
- ¿ Final examination: 0.5 ECTS (PO a, c)
 - Purpose: to complete the development of specific cognitive and procedural capabilities.

ASSESSMENT SYSTEM

The evaluation system includes the assessment of guided academic activities and practical cases, with the following weights:

Practical case: 60% (PO a, c, d, e, k)

Critical analysis of research papers: 20% PO (e, d, f, g)

Examination: 20% (PO a, c)

Final examination is mandatory (minimum grade 4/10).

% end-of-term-examination:	20
% of continuous assessment (assignments, laboratory, practicals...):	80

BASIC BIBLIOGRAPHY

- Dragan. S. Context-aware mobile and ubiquitous computing for enhanced usability : adaptive technologies and applications. , Hershey (Pennsylvania), 2009
- Grudin, J. The Computer Reaches Out: The Historical Continuity of Interface Design, ACM, 1990
- Krumm, J. Ubiquitous computing Fundamentals., Chapman & Hall/CRC Press , 2010
- Weiser, M. The Computer of the 21st Century , ACM, 1997
- Weiser, M., Brown J. S. The Coming of Age of Calm Technology , Copernicus, 1997

ADDITIONAL BIBLIOGRAPHY

- Bradski, Gary Learning OpenCV: Computer Vision with the OpenCV Library, O'Reilly Media, 2008
- Greenberg, Ira Processing : creative coding and computational art, friendsofED, 2007
- Grudin, J. The Computer Reaches Out: The Historical Continuity of Interface Design, ACM, 1990
- Lott, Joey; Schall, Darron; Peters, Keith ActionScript 3.0 Cookbook : Solutions for Flash Platform and Flex Application Developers: Solutions for Flash Platform and Flex Application Developers, O'Reilly, 2006
- Upadhyaya, S., Chaudhury, A., Kwiat, K., Wiser, M. Mobile Computing: Implementing Pervasive Information and Communications Technologies, Springer, 2002
- Weiser, M. The Computer of the 21st Century , ACM, 1999
- Weiser, M., Brown J. S. The Coming of Age of Calm Technology , Copernicus, 1997
- Zigurd Mednieks; Laird Dornin; G. Blake Meike; Masumi Nakamura Programming Android, 2nd Edition, O'Reilly Media, 2012