

Academic Year: (2020 / 2021)

Review date: 10-07-2020

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: ONORATI , TERESA

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Programming, Principles of Informatics Engineering, Automata and Formal Language Theory

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 user interface elements
 - ¿ Knowledge of principles, guidelines and standards for the development of useful and usable user interfaces
 - ¿ Techniques for developing web interfaces
 - ¿ Knowledge of user-centered design methods
 - o Procedural/Instrumental (PO a, c, e, k)
 - ¿ Developing an useful and usable user interface
 - ¿ Designing an useful and usable web user interface
 - o Attitudinal (PO c, d, f)
 - ¿ Creativity
 - ¿ Quality concerns
 - ¿ Achievement motivation
 - ¿ Interesting for doing research and figuring out solutions to new problems

DESCRIPTION OF CONTENTS: PROGRAMME

Human-computer interaction; usability: principles, guidelines and standards for the development of user-interfaces; web interfaces.

PROGRAMME:

1. Introduction to Human-Computer Interaction
 - a. Definition, utility, relation with User Interface Design
 - b. History of HCI
 - c. Examples from everyday life
2. User interface design
 - a. Definition and utility
 - b. User-centered Design
 - i. Usability
 - ii. Principles, Guidelines, heuristics and Patterns
 - iii. Design Methodology
 - iv. Prototype
 - c. Universal Design
3. Web user Interface Design
 - a. Definition, History and Evolution of WWW
 - b. Structure and navigation of a web site
 - c. Web design principles, heuristics and patterns
4. Interaction design with user interfaces
 - a. User eXperience (UX)
 - b. Interaction design with website

- c. Predictive models
 - i. Fitt Law
 - ii. Sterring Law
- d. Descriptive models
 - i. KLM
 - ii. GOMS
- e. Explanatory models
- f. Inspection methods
- g. Interaction Paradigms
 - i. Large Scale Computing
 - ii. Personal Computing
 - iii. Mobile Computing
 - iv. Ubiquitous Computing
 - v. Network Computing
 - vi. Reality Computing: Augmented Reality and Virtual Reality

Annex. Technologies for developing web user interface

- Web sites (HTML 5 and CSS 3)
- Client-side scripting (JavaScript)
- Design methodology (Prototype and Implementation)

LEARNING ACTIVITIES AND METHODOLOGY

- ¿ Theoretical lectures: 2 ECTS (PO a)
 - Purpose: to achieve the specific cognitive competencies of the course.
 - Implementation: lectures in which theoretical concepts on user interfaces 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 user interfaces are exposed.
- ¿ Practical case: 1.75 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.
- ¿ Programming exercises: 0.75 ECTS (PO a, c, e, k)
 - Purpose: to deepen the knowledge of specific topics of the course.
 - Implementation: Students resolver programming exercises of web user interfaces.
- ¿ 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: 40% (PO a, c, d, e, k)

Students must submit two different exercises. The first one about prototyping represents a ten per cent (10%) of the final grade. The second one about implementing and documentation represents a thirty per cent (30%) of the final grade.

Programming exercises: 20% (PO c, f, k)

Students must submit two different exercises, each one of them represents a ten per cent (10%) of the final grade.

Examination: 40% (PO a, c)

Final examination is mandatory and final mark must be higher than 5 of 10.

% end-of-term-examination:	40
% of continuous assessment (assignments, laboratory, practicals...):	60

BASIC BIBLIOGRAPHY

- Dix, A., Finlay, J., Abowd, G., Beale, R. Human-Computer Interaction, Prentice Hall, 3rd Edition, 2004.
- Nielsen, J. Designing Web Usability, New Riders, 2000.
- Preece, J. Interaction Design. Beyond human computer interaction., John Wiley & Sons, 2002.
- Shneiderman, B. Designing the User Interface., Addison-Wesley, 1999, 3rd Edition.

ADDITIONAL BIBLIOGRAPHY

- Ballard, B. Designing the mobile user experience., Willey, 2007.
- Basham, B., Sierra, K. & Bates, B. Head First Servlets and JSP: Passing the Sun Certified Web Component Developer Exam., O'Really Media, 2008.
- Castro, E. HTML, XHTML and CSS., Peachpit Press, 2006.
- Cole, A. Learning Flex 3: Getting up to Speed with Rich Internet Applications., Adobe Dev Library, 2008.
- Cooper, A.m Reinmann, R., Cronid, D. About Face 3: The Essentials of Interaction Design., Wiley, 2007.
- Flanagan, D. JavaScript: The Definitive Guide., O'Really Media, 2006.
- Gassner, D. Flex 3 Bible., Wiley, 2008.