User Interfaces

Academic Year: (2019/2020)

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: ONORATI, TERESA

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

### 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
- 2. Web user interface
- Hypertext and Hypermedia
- Evolution of the web
- Web Usability
- Heuristics
- Patterns for web design
- Accesibility
- Design of a web site
- 3. WIMP user interfaces
- WIMP Interfaces
- Stules
- Design principles

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- 4. The design of user interfaces
- -Objectives of the design
- -Theories and models of design
- -Design principles
- -Design elements
- 5. Interaction
- Paradigms
- Sides of the interaction
- User experience

Annex. Technologies for developing web user interface

- Web sites (HTML 5 and CSS 3)
- Client-side scripting (JavaScript)
- JavaScript libraries (JQuery)

# 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

% end-of-term-examination/test:	40
% of continuous assessment (assigments, laboratory, practicals):	60

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.

# BASIC BIBLIOGRAPHY

- Dix, A., Finlay, J., Abowd, G., Beale, R. Human-Computer Interaction, Prentice Hall, 3rd Edition, 2004, 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, 3rd Edition, 1999

# 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.

- 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.