340268 - ENUA-D7P32 - Usability and Accessibility Engineering

**Coordinating unit:** 340 - EPSEVG - Vilanova i la Geltrú School of Engineering  
**Teaching unit:** 732 - OE - Department of Management  
**Academic year:** 2017  
**Degree:** BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2009). (Teaching unit Optional)  
**ECTS credits:** 6  
**Teaching languages:** Catalan, Spanish  

**Teaching staff**

**Coordinator:** MARTA DÍAZ BOLADERAS  
**Others:** JOSE M. IBAÑEZ GARCÍA  
Díaz Boladeras, Marta  

**Requirements**

Previously passed  
MEDI Metodologia del disseny  
And jointly with INPS we recommend  
ENUA Enginyeria de la usabilitat i l'accessibilitat  
DIDU Disseny inclusiu i disseny centrat en l'usuari

**Degree competences to which the subject contributes**

**Transversal:**

1. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.  
3. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.  
5. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.  
7. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.  
4. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.
Presentation-synthesis

In the sessions the teacher makes a summary of the topic. This presentation is intended as a guide work study students, with the function of introducing the item, propose material for study, clarify doubts and synthesis.

Each topic will be provided with:
- Power Point presentations used in class and other supplementary material will be available on the Digital Campus.
- Bibliography indicating specific location, preferring to material in electronic format.

Working activities and exercises

- Problems and Exercises for fixing the concepts introduced in the presentation.
- Approach of situations that allow the group builds a shared experience that will serve to advance in the understanding of content (eg, group dynamics, effective communication experiences.) They are based on experience different situations in which the experience serves as a study material.

Casework and articles

The work on cases or article will be based on questions raised by the professor. These works must to be delivered on date at the beginning of the session where will be discussed in class. The deadline to submit is specified in calendar. The teacher may show in the Digital Campus some of the best works delivered to be used as a reference.

The casework seeks to promote the following capabilities:

- Understanding of the situation presented and the ability to synthesize the most relevant issues
- Apply the concepts to practical cases.
- Capturing the complexity of real life situations, different points of view and various dimensions of the organizational and management issues
- Ability to exchange views and discuss, and ability to learn from the debate

Practices

Practices are held in groups of up to five members, to be established at the beginning of the course and will be maintained. Throughout the course there will be three practices where there are problems which will need to apply knowledge which is being acquired. These practices serve as the backbone of learning, following the principles of project-based learning. For each practice it will provided a dossier that shall include the objectives, description, date of delivery, and criteria assessment. Each practice will consist of a report and a presentation at pp.

Oral presentations

Each student will present oral argument at least once during the term. The days of presentation are announced at the beginning of the course. The day of the presentation the teacher a designate the groups that will carried out the presentation.

Small group and individual tutoring

The teacher will follow up the student progress and supervise their practices and work, providing feedback on their progress, the degree of achievement of the objectives of their work, giving directions for improvement.
Learning objectives of the subject

TARGETS

1. Understand the different phases and the need for a quality assurance system for the interaction throughout the product development cycle.

2. Know the specific techniques of optimization of Usability and know how to plan and apply the main ones: design guides, inspection techniques and heuristic evaluation and tests with users (definition of metrics, observation situations, sessions development and Analysis)

3. Know how to obtain from the tests and tests of use relevant and useful information for the redesign and refinement of the product and know how to communicate efficiently to others involved in the development of the product.

4. To develop an usability and accessibility report by reporting the tests carried out, in accordance with the most recognized standards and requirements of the clients.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 15h</td>
<td>10.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 105h</td>
<td>70.00%</td>
</tr>
</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Module 1 Introduction to usability engineering</th>
<th>Learning time: 32h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 8h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
</tr>
<tr>
<td></td>
<td>Self study : 18h</td>
</tr>
</tbody>
</table>

### Description:
Identify the different phases of a process of quality assurance in use of a product from the point of view of the user, from conceptualization to the product on the market.

### Related activities:
- Analysis of specifications for use
- Planning the DCU process

### Specific objectives:
- The DCU process
- Variations of the DCU
- Standards
- Usability

<table>
<thead>
<tr>
<th>29/ 5000 Module 2 Techniques of inquiry</th>
<th>Learning time: 39h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 8h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
</tr>
<tr>
<td></td>
<td>Self study : 21h</td>
</tr>
</tbody>
</table>

### Description:
To know and apply the main techniques during the conceptual phase. To know how to prepare a user requirements report.

### Related activities:
- Planning the inquiry technique
- Requirements analysis

### Specific objectives:
125/5000
A) Field observation (ethnographic)
B) Targeted discussion groups (Focus group)
C) Interviews
D) Recording of use (Logging)
### Module 3 Inspection techniques

**Learning time:** 39h  
- Theory classes: 10h  
- Practical classes: 0h  
- Laboratory classes: 8h  
- Guided activities: 0h  
- Self study: 21h

**Description:**  
Know and apply the main verification techniques for compliance with criteria (guides and standards)

**Related activities:**  
- Planning of the inspection technique  
- Analysis of requirements

**Specific objectives:**  
1. Heuristics evaluation  
2. Inspection of standards  
3. Card sorting

### Module 4 Test techniques

**Learning time:** 79h 45m  
- Theory classes: 41h 15m  
- Practical classes: 0h  
- Laboratory classes: 22h 30m  
- Guided activities: 0h  
- Self study: 16h

**Description:**  
Conceixir and apply proves d’usabilitat amb usuaris in real laboratori.

**Related activities:**  
- Test plan  
- Analysis plan  
- Final report

**Specific objectives:**  
1. Ethical considerations  
2. Establishment of specific and metric targets  
3. Design of the test situation and tasks  
4. Techniques for collecting data  
5. Analysis, results and recommendations
### Module 6 User Experience

**Description:**
- 4.1 Beyond usability
- 4.2 Emotional Design
- 4.3 Interaction with technologies personified
- 4.4 A special case: the social relationship with robots

**Specific objectives:**
- Enginyeria Kansei
- Diferencial semàntic

**Learning time:** 1h
- Theory classes: 1h

### Module 7 Practical guide to product design and services (HCD toolkit)

**Description:**
In this module we will work to try to have a practical guide to face different project situations, such as: providing innovation to products and services for customers, trying to better understand the needs of people, Introduce design solutions or adapt technology to a new region or geographical area, find new methods to visualize and evaluate the work to be performed.

**Related activities:**
The students will participate in different group work (workshop format) to bring into practice the concepts exposed during the classes to raise new product designs or service designs

**Specific objectives:**
- Identify the appropriate interlocutors, know how to combine personal experiences and stories (as a base information) and how to document the professional observations of their own.
- Generate opportunities and solutions that can be applied to the whole community.

**Learning time:** 1h
- Theory classes: 1h

### Module 8 Project

**Description:**
Development of a project in group.

**Related activities:**
- Presentation of the final written report
- Defense of the project

**Learning time:** 1h
- Theory classes: 1h
Evaluation is ongoing. In the evaluation of student work submitted will be considered, the project in the group and the acquisition of valued content individual written tests (tests). Memory projects and oral presentation will be assessed. Tests may consist of a part of short ask or multiple choice, and another open questions or development and / or practical exercises, and will focus on any topic of both theoretical and project.

**FINAL GRADE = UX Mark* 0.50 + HCD Mark * 0.50**
UX Mark = Project Mark* 0.70 + Individual Mark* 0.30

Being the continuous evaluation, the re-evaluation is not necessary.

### Bibliography

**Basic:**


**Complementary:**


**Others resources:**

**Audiovisual material**

Libro-e AIPO
http://www.aipo.es/libro/libroe.php

DSI
http://www.epsevg.upc.edu/hcd/

http://www.interaction-design.org/