UNIVERSIDAD POLITÉCNICA DE MADRID
FACULTAD DE INFORMÁTICA
Campus de Montegancedo
Boadilla del Monte. 28660 Madrid

Interaction Design

Learning Guide – Information for the Student

1. Descriptive Data

Grade	Máster Universitario en Ingeniería de Software/ European Master on Software Engineering
Module	Advanced Software Engineering Aspects
Subject	Interaction Design
Type	Elective
ECTS credits	6
Responsible department	Departamento de Lenguajes y Sistemas Informáticos e Ingeniería de Software

Academic year	2012-2013
Term	2nd term
Language	English
Web site	http://is.ls.fi.upm.es/docencia/interactiondesign/

2. Faculty

NAME and SURNAME	OFFICE	email
Xavier Ferré (Coord.)	5112	xavier.ferre@upm.es

3. Prior knowledge required to take the subject

Basic knowledge on Human-Centered Design and the Human-Computer Interaction discipline.

4. Learning goals

SUBJECT-SPECIFIC COMPETENCES AND PROFICIENCY LEVEL		
Code	**Competence**	**Level**
CE-13	To have an overview of the software engineering emerging and specific aspects, and to know in depth some of them.	S
CE-14	To understand what current software engineering practices can and cannot achieve, their limitations and possible future evolution	S

Proficiency level: knowledge (K), comprehension (C), application (A), and analysis and synthesis (S)

SUBJECT LEARNING OUTCOMES			
Code	**Learning outcome**	**Related competences**	**Proficiency level**
LRASEA1	Given a specific software engineering field, the student assesses and designs the most appropriate solution to solve some of its problems, presenting the technical difficulties and applicability limitations.	CE-13, CE-14	S
LRASEA2	Given a real problem, the student chooses the most appropriate software engineering solution, analyzing the solution feasibility, what can and cannot be achieved through the current status of the chosen solution, and what it can advance in the future.	CE-13, CE-14	S
LRASEA3	The student explains what are the software engineering limits and frontiers, and the base for new trends and developments, and about the advanced issues and their application.	CE-13, CE-14	S

5. Subject assessment system

ACHIEVEMENT INDICATORS		
Ref	**Indicator**	**Related to LR**
I1	Enrich the requirements specification of a software system with the incorporation of Human-Computer Interaction techniques for the definition of user needs and product concept.	LRASEA1, LRASEA2
I2	Articulate user participation in the interaction design of a software system.	LRASEA1, LRASEA2
I3	Map interaction design activities and techniques to software engineering practices from a software development process perspective.	LRASEA3
I4	Classify relevant aspects beyond usability and how they can be pursued throughout the software development process.	LRASEA3

CONTINUOUS ASSESSMENT			
Brief description of assessable activities	**Time**	**Place**	**Weight in grade**
Class presentations and participation (both in the classroom and in the moodle platform)	Every week	Classroom and moodle	10%
Team assignments	Weeks 4, 7, 8, 9, 12, 15	Classroom and moodle	25%
Reflections on course contents	Every week	Individual blog	45%
Final individual assignment	16	Moodle	20%
			Total: 100%

GRADING CRITERIA

The work in the course is mainly based on the reflections and practical application of the concepts dealt with in the weekly lectures. Some assignments are individual, while some others are done in teams of 2-3 students. Regular work and attendance to classes is recommended for an adequate elaboration of the individual weekly assignments.

Grading for the course will be composed by the combination of the following activities in the stated percentage:

- How students show their understanding and critical analysis ability, through the written impressions on every week subject through the individual blog (45%) and through participation (10%), both in the classroom and in the moodle virtual forum.
- Written team assignments and their presentation in the classroom will show how students have performed adequately the bibliography search or case study search, and that they have understood the main principles behind the subjects studied. (25%)
- Individual final assignment, were the student will show his/her understanding and critical analysis ability about the course subjects from a holistic point of view (20%).

6. Contents and learning activities

SPECIFIC CONTENTS		
Unit / Topic / Chapter	**Section**	**Related indicators**
Chapter 1: Interaction design as part of the software development process	1.1 Interaction design, usability, HCI and User-Centered Design (UCD)	I4
	1.2 UCD process characteristics	I4
	1.3 Cost-justifying usability	I4
	1.4 Comparison of Human-Computer Interaction (HCI) and software engineering perspectives	I3
Chapter 2: HCD and Requirements Engineering	2.1 User needs and product concept: Software engineering vs UCD	I1
	2.2 Usability specifications	I1
	2.3 UCD techniques for requirements activities	I1
Chapter 3: Envisioning design	3.1 Design characteristics	I3, I4
	3.2 Competitive analysis	I3
	3.3 Interaction design modeling	I3
	3.4 Graphic design aspects	I3, I4
Chapter 4: A broadened scope for usability	4.1 Accessibility vs. usability	I4
	4.2 Additional measures of usability	I4
	4.3 User experience (UX)	I4
	4.4 Broadening satisfaction	I4
Chapter 5: User Participation in Development	5.1 The role of users in interaction design	I2
	5.2 Workshop settings	I2
	5.3 Participatory design	I2
	5.4 Participatory evaluation	I2
Chapter 6: Collaboration and global development	6.1 Cross-cultural interaction design	I4
	6.2 Designing for collaboration	I4

Chapter 7: Evolution & maintenance	7.1 Usability evaluation of installed systems	I3
	7.2 User observation	I3
	7.3 Questionnaires & interviews	I3
Chapter 8: Specific interaction paradigms	8.1 Mobile apps	I4
	8.2 Web-based interaction	I4

7. Brief description of organizational modalities and teaching methods

BRIEF DESCRIPTION OF THE ORGANIZATIVE MODALITIES AND TEACHING METHODS USED	
THEORETICAL CLASSES	Theoretical classes will proceed participatively, with discussion of the open issues in the classroom
PROBLEM-SOLVING CLASSES	Some classes will be dedicated to problem solving and modeling in the classroom to have a discussion on the issues modeled at the end of the classroom.
PRACTICAL WORKS	
INDIVIDUAL WORKS	Individual works will be announced through the moodle for the course.
GROUP WORKS	HCI technique selection for case studies will be carried out in teams of 2-3 students.
TUTORING ASSISTANCE	Assignments will be tutored at the student request.

8. Teaching resources

TEACHING RESOURCES	
RECOMMENDED READING	**Interaction Design: Beyond Human-Computer Interaction.** Helen Sharp, Yvonne Rogers, Jenny Preece. John Wiley & Sons, 2007.
	Software for Use: A Practical Guide to the Models and Methods of Usage-Centered Design. Larry L. Constantine, Lucy A. D. Lockwood. Addison-Wesley, 1999.
	Designing the User Interface. Strategies for Effective Human-Computer Interaction. 4th ed. Ben Shneiderman, Catherine Plaisant. Addison Wesley, 2005.
	Designing Visual Interfaces. Communication Oriented Techniques. Kevin Mullet, Darrell Sano. Prentice Hall, 1994.
WEB RESOURCES	Subject's web site (http://is.ls.fi.upm.es/docencia/interactiondesign)
	Subject's Moodle site (http://moodle.upm.es/)
EQUIPMENT	Laboratory : Not applicable.
	Room 6202
	Group work room: Any group work room in the school.

9. Subject schedule

Week	Classroom Activities	Lab Activities	Individual work	Group work	Assessment Activities	Others
Week 1 (5 h)	• Theory Class: Ch. 1 (2 h). • Theory Class: Ch. 1 (1 h).	•	• Write down about previous experience of dealing with usability issues in projects (1 h)	• Team formation (1 h)	•	•
Week 2 (10 h)	• Theory Class: Ch. 2 (2 h). • Theory Class: Ch. 2 (1 h).	•	• Reflections on this week lectures (4 h)	• Create a web/blog with a description of a case study (3 h)	•	•
Week 3 (12 h)	• Theory class: Ch. 3 (2 h) • Theory class: Ch. 3 (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for establishing user needs and product concept (5h)	•	•
Week 4 (11 h)	• Presentation of strategy for user needs (2 h) • Presentation of strategy for user needs (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for establishing user needs and product concept (2h) • Presentation preparation (2h)	•	•
Week 5 (7 h)	• Theory class: Ch. 4 (2 h) • Theory class: Ch. 4 (1 h)	•	• Reflections on this week lectures (4 h)	•	•	•
Week 6 (11 h)	• Theory class: Ch. 5 (2 h) • User participation practical workshop (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for user participation (4 h)	•	•

Week	Classroom Activities	Lab Activities	Individual work	Group work	Assessment Activities	Others
Week 7 (11 hours)	• Theory class: Ch. 5 (1 h) • Presentations on strategy for user participation (1 h) • Presentations on strategy for user participation (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for user participation (2h) • Presentation preparation (2 h)	•	•
Week 8 (11 h)	• Theory class: Ch. 6 (2 h) • Theory class: Ch. 6 (1 h)	•	• Reflections on this week lectures (4 h)	• Study on usability impact of global development (4 h)	•	•
Week 9 (9 h)	• Presentations on cultural impact (2 h) • Presentations on cultural impact (1 h)	•	• Reflections on this week lectures (4 h)	• Presentation preparation (2 h)	•	•
Week 10 (10 h)	• Theory class: Ch. 7 (2 h) • Theory class: Ch. 7 (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for evolution (3 h)	•	•
Week 11 (11 h)	• Theory class: Ch. 7 (2 h) • Follow-up of team projects (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for evolution (4 h)	•	•
Week 12 (9 h)	• Presentations on evolution strategy (2 h) • Presentations on evolution strategy (1 h)	•	• Reflections on this week lectures (4 h)	• Presentation preparation (2 h)	•	•
Week 13 (11 h)	• Theory class: Ch. 8 (2 h) • Theory class: Ch. 8 (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for mobile/web development (4 h)	•	•

Week	Classroom Activities	Lab Activities	Individual work	Group work	Assessment Activities	Others
Week 14 (11 h)	• Theory class: Ch. 8 (2 h) • Follow-up of team projects (1 h)	•	• Reflections on this week lectures (4 h)	• Strategy for mobile/web development (4 h)	•	•
Week 15 (11 h)	• Presentations mobile/web development (2 h) • Presentations mobile/ web development (1 h)	•	• Final individual assignment (6 h)	• Presentation preparation (2 h)	•	•
Week 16 (12 h)	• Optional follow-up of final individual assignment (4h)	•	• Final individual assignment (12 h)	•	•	•

Total: 162 h.

Note: For every activity the dedication in hours entailed for the student is specified.