



Universitat de Lleida

DEGREE CURRICULUM
**EVALUATION TECHNIQUES
AND USABILITY TESTING**

Coordination: SENDÍN VELOSO, MONTSERRAT

Academic year 2019-20

Subject's general information

Subject name	EVALUATION TECHNIQUES AND USABILITY TESTING			
Code	103083			
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Master's Degree in Informatics Engineering	1	COMPULSORY	Attendance-based
Course number of credits (ECTS)	4.5			
Type of activity, credits, and groups	Activity type	PRALAB	TEORIA	
	Number of credits	3	1.5	
	Number of groups	1	1	
Coordination	SENDÍN VELOSO, MONTSERRAT			
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING			
Teaching load distribution between lectures and independent student work	Presential class: 30% (equivalent to 33,75 h) Autonomous work: 70% (equivalent to 78,75 h)			
Important information on data processing	Consult this link for more information.			
Language	English:			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
SENDÍN VELOSO, MONTSERRAT	montse.sendin@udl.cat	4,5	

Subject's extra information

This subject is located in the second term of the first course of the Master. Semi-presencial format.

It requires some concepts from the Human-Computer Interaction (HCI) discipline. In particular, some concepts such as *usability*, *interface*, *User Centred Design methodology* (UCD), etc. are considered as **previous concepts highly recommended**.

For those students who are not studied any related subject, some introductory material will be provided.

Learning objectives

- Understanding the importance of the evaluation of interactive systems in the UCD (User Centred Design) context
- Develop the role of evaluator of a interactive system
- Knowing the procedure to be carried out in a usability test
- Knowing current tools for the collection and data analysis
- Defending upon a public the reports previously elaborated
- Get familiar with the user manuals available for the software installed in the usability lab.
- Extracting the main conclusions for the evaluation activities carried out, in the line of improving the usability of the interactive system
- Developing sample reports resulting from the evaluation techniques application, in a working group manner

Significant competences

University of Lleida strategic competences

UdL2. Command of a foreign language.

Degree-specific competences

CE14. Capacities to conceptualise, design, develop and evaluate the person-computer interaction of products, systems, applications and computer services.

Cross-disciplinary competences

EPS3. Capacity to convey information, ideas, problems and solutions to both a specialized and no specialized public.

Basic competences

CB3. Students are able to integrate knowledge and handle complexity, and formulate judgments based on information that was incomplete or limited, include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments

General competences

CG7. Capacity to implement and manage computer equipment manufacturing processes, guaranteeing personal and material safety, the final quality of products and their homologation.

CG10. Capacities to apply economic principles, manage human resources and projects, and comply with computer legislation, regulation and normalization

Subject contents

Theme I - Introduction to the Evaluation of the Usability

- 1.1. What is the evaluation in the HCI scope?
- 1.2. Objectives of the evaluation and aspects to consider
- 1.3. Taxonomy in evaluation methods
- 1.4. Integration of the evaluation techniques to the development life cycle
- 1.5. Conclusions

Theme II - Usability Testing

- 2.1. Introduction and technique definition
- 2.2. Test typologies
- 2.3. Usability Test Plan design and development
- 2.4. Preparing questionnaires and other documents
- 2.5. Metrics and data collecting
- 2.6. Roles in the execution of a usability test
- 2.7. Putting in practice
- 2.8. Final report development and results presentation
- 2.9. Benefits and inconveniences of UT
- 2.10. Conclusions

Theme III - Putting in practice the evaluation plan

- 3.1. Comparative between methods
- 3.2. Other selection criteria for the evaluation methods
- 3.3. The usability cost
- 3.4. Conclusions

Seminar - *UsabiliLab*: Equipment of a concrete usability laboratory

S.1. Morae: Suport in the UT elaboration

S.1.1. *Recorder*, *Observer* and *Manager* Moduls

S.2. *Eyetracking*

S.2.1. Introduction to the *eyetracking* technique

S.2.2. Hardware and Software in the *eyetracker* equipment

(To interlace conveniently along the semestre, according to the timing of the students evaluation project)

Methodology

Outstanding Aspects of the Methodology

- Eminently **practical** and **applying** subject.
- **Theoretical classes** and **seminar sessions** in the usability lab (*UsabiliLab*) are combined.
- **Continued avaluation** (continuous feedback student-professor, using mechanisms to apply improvements in the successive deliverables)
- **Problem Based Learning**, applied over the ICT Project developed along the 1rst semester. It is a **crossdisciplinar project** in which part of the competences of the three subjects are developed.
 - The three involved subjects are: IT Projects Management, ICT Projects: Development and Implementation and the current one.
- **Work in group** (between 3 and 5 people, as a model to follow inside a usability avaluators team)

Theoretical classes

- An overview of this part of the HCI discipline (the evaluation) is presented.
- Illustration of the methodology and the documents to elaborate through practical **case studies**.
 - Available material from the case studies is provided (prototypes, documents, vídeos, etc.)

Seminar sessions (*UsabiliLab*)

- Students are distributed in working groups, applying the **work-in-group** methodology.
- After an introduction to the available equipment, the students can develop their usability evaluation project during the rest of the class.
- **Practical application** of the usability testing technique, in all its dimension (planning, execution in the laboratory, posterior analysis and defense upon the class of the different elaborated reports and documents).
- **Opportunity to practise** the evaluator role, under the problem based learning context.

Autonomous work (non presential)

- The evaluation project is completed in no presential hours.
- *The student*:
 - Experiences by his/her own with the hardware and software presented, available in the laboratory
 - Gets familiar with the Manuals and Tutorials available (*Morae* and *Tobii Studio* Software)
 - Goes futher in the study of the techniques elaborating the written documents asked.

Development plan

Week	Theory	Seminar session (<i>UsabiliLab</i>)	Autonomous work
1	Subject presentation T1: Introduction to the Usability evaluation		Study
2	T2: Usability Testing		Study, study cases revision and Test plan initial approach
3	T2: Usability Testing Time to revise intital ideas by working groups		Study, study cases revision and Test plan development
4	T2: Usability Testing Time to revise ideas/doubts by working groups		Study, study cases revision and Test plan development
5		Introduction to the <i>eyetracker</i> and to the <i>Tobii Studio</i> software (1rst Part)	Study and Test plan development
6		Introduction to the <i>eyetracker</i> and to the <i>Tobii Studio</i> software (2nd Part)	Autonomous learning and Test plan development
7		<i>Morae Observer</i> and <i>Recorder</i> presentation	Autonomous learning and Test plan conclusion <i>Test Plan delivery</i>
8		Keys for putting in practice Usability tests. <i>Work-in-group</i> : project elaboration	Autonomous learning and <i>Test plan refinement</i> <i>Test plan 2nd delivery</i> (at middle week)
9	Presential Activity: Test Plan oral presentation (1rst midterm day)		<i>Individual theoretical work delivery</i>
10		Putting in practice Usability tests by the working groups	Usability Testing final revision
11		Putting in practice Usability tests by the working groups	Usability Testing final revision
12		Putting in practice Usability tests by the working groups	Study, study cases revision and Results report starting
13		Results report elaboration keys <i>Morae Manager</i> : preparation and results analysis	Autonomous learning, study cases revision and Results report development
14		<i>Tobii Studio</i> : specific metrics, preparation and results analysis	Autonomous learning and Results report conclusion
15	T3: Putting the avaluation in practice	<i>Work-in-group</i> : Results report elaboration	<i>Results report delivery</i> (at middle week)
16			Results report Refinement <i>Results report 2nd delivery</i>
17	Second midterm day: <i>Results report</i> oral presentation activity		
18	Tutories		
19	Recovery		

Evaluation

Activd.	Description	Weight	Minimum Grade	In group	Presential	Mandatory	Recoverable
Actv1	Test Plan	25%	5,0	Sí	No	Sí	Sí
Actv2	Test plan oral presentation	15%	No	Sí(50%) ¹	Sí	Sí	No
Actv3	Test Plan put in practice	15%	No	Sí(50%) ¹	Sí	Sí	No
Actv4	Results report	25%	5,0	Sí	No	Sí	Sí
Actv5	Results report oral presentation	15%	No	Sí(50%) ¹	Sí	Sí	No
Actv6	Individual theoretical work	<=1,5	No	No	No	No	No

¹In despite of being work-in-group activities, each group member will be avaluated by his/her individual performance

Final grade = 0,25 * Actv1 + 0,15 * Actv2 + 0,15 * Actv3 + 0,25 * Actv4 + 0,15 * Actv5 + Actv6

- Subject is passed if **final grade** is greater or equal than **5,0** and activities Actv1 and Actv4 are above the minimum required.
- The **compulsory part** has a weight of **95%**. The **optional part** is valorated in **1,5 points**, that is to say, in cas of be presented, subject is scored over 11 (1 point extra).

Other considerations:

- The application of the *Eyetracking* technique to the activities *Actv1* and *Actv4* deals to the possibility of obtaining an extra point in each one.
- For all the activities: programmed deliveries, unmovable dates
- In the activities with minimum grade required, the student can opt to a 2nd oportunity in which to apply those improvements conveniently received from the professor.
 - A *corrective factor* of 0,85% is applied to the improvements presented (if they are applied both, to the work and presentation), or of 60% (if they are only applied to the presentation).
- In the activities in group (both, 1rst and 2nd deliveries) all of the members receive the same mark only if a group development (consensual among all and cohesive enough) is proven.
- In the oral presentations all of the members have to be able to expose any of the established points.
- In case of not overcoming the UT technique as a whole (group and individual marks):
 - Recovery exam of the subject theoretical part (19th week)

Bibliography

Basic bibliography

USABILITY TESTING

- Barnum C.M. *Usability Testing and Research*. Longman (2002)
- Rubin J. *Handbook of Usability Testing. How to plan, design and conduct effective tests*. John Wiley & Sons, Inc. (1994)
- Mitchell P.P. *A Step-by-Step guite to Usability Testing*. iUniverse, Inc. (2007)

Adaptations to the contents due to COVID-19

The contents of the subject do not change. However, instead of presenting the tools of the laboratory (*UsabiliLab*) in face-to-face sessions (seminars), which is exactly what we were going to start at the moment when the alarm situation broke, the sessions have been replaced by short video tutorials, demonstration sessions (small demos) specifically prepared and facilitated through the CV, as well as by existing official videos of the software companies (*Tobii Studio* and *Morae*) through youtube channels.

Additionally, students have been provided with little guidelines specifically elaborated for the needs of each student, configuration files that have been prepared by the teacher, etc., to guide the follow-up of teaching the subject in an online modality, with the minimal variation in contents.

Obviously, there has been necessary to make a change in the dedication and methodology of both, the students and the teacher, but what, in return, now we dispose of material prepared and recorded, whereas in the case of face-to-face teaching, all of these guidelines, recommendations and resources had not been recorded.

Adaptations to the methodology due to COVID-19

As I said before, the methodology changes substantially, as the presentation of laboratory tools has now been replaced by the revision of generic manuals for each tool, material specifically designed by the teacher, and the use of resources individually by each student, and / or through teamwork.

Therefore, we could say that the methodology has acquired a dimension much more autonomous, active and content discovery self-learning, that is, a methodology not so much teacher-driven through accompanying sessions.

Adaptations to the development plan due to COVID-19

The development plan has hardly changed. The activities are being presented practically following the expected tempos.

It has been only necessary to adapt the timing of two activities that have undergone a change in the weight and in the character of obligatory / optional given the circumstances, as detailed in the following section. These are the activities designated with Actv4 (changed from OBL to OPC) and Actv5 (just on the contrary), with also a change in the weight of both in the subject and also in its timing.

Adaptations to the evaluation due to COVID-19

Final grade = $0.35 * \text{Actv1} + 0.25 * \text{Actv2} + 0.15 * \text{Actv3} + 0.10 * \text{Actv4} + 0.25 * \text{Actv5}$

- The application of the Eyetracking technique to the Actv1 activity will mean opting for up to 1 extra point.
- For all evaluable activities: Scheduled deliveries, non-extendable dates.
- In the activity with the minimum required grade, the student can opt for a replay (2^a opportunity to apply the improvements received in a timely manner as feedback from the teacher).
- A correction factor of 70% (if applied to both the work and the presentation) or 60% (if these are only applied to the presentation) is applied to the improvements applied. They have received feedback continuously through deliveries made weekly in the 1st part of the semester.
- In group activities (both in the 1st delivery and in the second leg) all members will receive the same grade only if group development is demonstrated (agreed by all and duly cohesive).
- In oral defense activities, all members must be able to present any of the established points.

- Failure to pass the TU technique as a whole (group grade plus individual grade):
- Exam Recovery theoretical part of the subject (week 19^a)