ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000603 - Challenges For Accessible Computing For People With Functional Diversity

DEGREE PROGRAMME

10AM - Master Universitario en Ingenieria del Software

ACADEMIC YEAR & SEMESTER

2020/21 - Semester 1

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1. Description

1.1. Subject details

Name of the subject	103000603 - Challenges For Accessible Computing For People With Functional Diversity
No of credits	4 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AM - Master Universitario en Ingenieria del Software
Centre	10 - Escuela Tecnica Superior de Ingenieros Informaticos
Academic year	2020-21

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Jose Luis Fuertes Castro (Subject coordinator)	D4307	joseluis.fuertes@upm.es	M - 16:30 - 17:00 Tu - 17:00 - 20:15 W - 12:00 - 14:15
Loic Antonio Martinez Normand	D3352	loic.mnormand@upm.es	Tu - 13:00 - 15:00 Th - 13:00 - 15:00 F - 13:00 - 15:00 Please confirm appointment via email

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Skills and learning outcomes *

3.1. Skills to be learned

CE13 - Tener una visión de los distintos aspectos específicos y emergentes de la ingeniería del software, y profundizar en algunos de ellos

CE14 - Comprender lo que pueden y no pueden conseguir las prácticas actuales de ingeniería del software, y sus limitaciones y su posible futura evolución.

CG13 - Apreciación de los límites del conocimiento actual y de la aplicación práctica de la tecnología más reciente

3.2. Learning outcomes

RA18 - 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.

RA1 - Within an application field of Software Engineering, uses and designs the appropriate solution to solve some of its problems, describing the technical difficulties and the application limits

RA3 - Explains which are the Software Engineering limits and frontiers, and the base of new tendencies and developments and advanced topics and their possible application

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

This course provides a specialization about the accessibility of information and communication technologies (ICT) for persons with functional diversity (disability). It is mainly focused on current research issues in the field.

The course will start with an introduction to basic ICT accessibiltiy concepts: functional diversity, design for all, legislation, standards and the assessment of the accessibility degree of ICT products and services.

After that, the students will work on current challenges in the field, such as:

- Methods, techniques and tools for accessibility evaluation
- Applying user centred design and design for all in development methodologies
- New ICT accessibility standards

4.2. Syllabus

1. Functional diversity, accessibility and design for all
   1.1. Introduction
   1.2. Functional diversity
   1.3. Assistive products for ICT
   1.4. Principles of accessible design
2. ICT accessibility standards
   2.1. Introduction to standards
   2.2. Relevant ICT accessibility standards
   2.3. Deeper study of one accessibility standard
   2.4. Conformity assessment
3. State of the art in ICT accessibility
   3.1. State of the art and future trends
4. Human-centred design
   4.1. Introduction to human-centred design

5. Schedule

5.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	**Course introduction** Duration: 00:20 Lecture **Chapter 1: 1.1- Introduction** Duration: 01:40 Lecture		**Course introduction** Duration: 00:20 Lecture **Chapter 1: 1.1- Introduction** Duration: 01:40 Lecture	
2	**Chapter 1: 1.2- Functional diversity** Duration: 01:30 Lecture		**Chapter 1: 1.2- Functional diversity** Duration: 01:30 Lecture	**Personas evaluation** Other assessment Continuous assessment Presential Duration: 00:10 **Individual presentation of personas** Individual presentation Continuous assessment Presential Duration: 00:20
3	**Chapter 1: 1.3- Assistive products** Duration: 02:00 Lecture		**Chapter 1: 1.3- Assistive products** Duration: 02:00 Lecture	
4	**Chapter 1: 1.4- Principles of accessible design** Duration: 00:45 Cooperative activities **Chapter 2: 2.1- Introduction to standards** Duration: 00:20 Lecture		**Chapter 1: 1.4- Principles of accessible design** Duration: 00:45 Cooperative activities **Chapter 2: 2.1- Introduction to standards** Duration: 00:20 Lecture	**Individual presentation of principles of Design for All** Individual presentation Continuous assessment Presential Duration: 00:45 **Desgin for All evaluation** Other assessment Continuous assessment Presential Duration: 00:10
5	**Standards overview discussion** Duration: 00:45 Cooperative activities **Chapter 2: 2.2- Relevant ICT standards** Duration: 00:45 Cooperative activities **Explanation of exercise 1** Duration: 00:15 Lecture		**Standards overview discussion** Duration: 00:45 Cooperative activities **Chapter 2: 2.2- Relevant ICT standards** Duration: 00:45 Cooperative activities **Explanation of exercise 1** Duration: 00:15 Lecture	**Standard overview evaluation** Other assessment Continuous assessment Presential Duration: 00:15

6	**Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 01:30 Cooperative activities		**Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 01:30 Cooperative activities	**One accessibility standard evaluation (discussion)** Individual presentation Continuous assessment and final examination Presential Duration: 00:30
7	**Explanation of exercise 2** Duration: 00:45 Lecture **Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 00:30 Lecture **classroom tutoring. Exercise 1** Duration: 00:30 Additional activities		**Explanation of exercise 2** Duration: 00:45 Lecture **Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 00:30 Lecture **classroom tutoring. Exercise 1** Duration: 00:30 Additional activities	**Test 1** Written test Continuous assessment Not Presential Duration: 01:00 **One accessibility standard evaluation** Other assessment Continuous assessment Presential Duration: 00:15
8	**Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 01:30 Cooperative activities		**Chapter 2: 2.3- Deeper study of one accessibility standard** Duration: 01:30 Cooperative activities	**Delivery of exercise 1** Individual work Continuous assessment and final examination Not Presential Duration: 00:00 **One accessibility standard evaluation (discussion)** Individual presentation Continuous assessment and final examination Presential Duration: 00:30
9	**Chapter 2: 2.4- Conformity assesment** Duration: 01:30 Lecture **Classroom tutoring. Exercise 2** Duration: 00:30 Additional activities		**Chapter 2: 2.4- Conformity assesment** Duration: 01:30 Lecture **Classroom tutoring. Exercise 2** Duration: 00:30 Additional activities	
10	**Chapter 3: 3.1- State of the art and future trends** Duration: 01:30 Lecture **Explanation of exercise 3** Duration: 00:20 Lecture		**Chapter 3: 3.1- State of the art and future trends** Duration: 01:30 Lecture **Explanation of exercise 3** Duration: 00:20 Lecture	**Delivery of exercise 2** Individual work Continuous assessment and final examination Not Presential Duration: 00:00 **State of the art in ICT accessibility evaluation** Other assessment Continuous assessment Presential Duration: 00:10
11	**Collective revision of exercise 2** Duration: 02:00 Cooperative activities		**Collective revision of exercise 2** Duration: 02:00 Cooperative activities	

12	**Chapter 4: 4.1- Human-centred design** Duration: 01:45 Cooperative activities		**Chapter 4: 4.1- Human-centred design** Duration: 01:45 Cooperative activities	**Human-centred design evaluation** Other assessment Continuous assessment Presential Duration: 00:15
13	**Classroom tutoring. Exercise 3** Duration: 02:00 Additional activities		**Classroom tutoring. Exercise 3** Duration: 02:00 Additional activities	
14				**Classroom presentation of exercise 3** Individual presentation Continuous assessment Presential Duration: 02:00
15				**Classroom presentation of exercise 3** Individual presentation Continuous assessment Presential Duration: 02:00 **Delivery of exercise 3** Individual work Continuous assessment and final examination Not Presential Duration: 00:00
16				
17				**Test 1** Written test Final examination Not Presential Duration: 01:00 **Presentation of exercise 3** Individual presentation Final examination Presential Duration: 02:00 **Test 2** Written test Continuous assessment and final examination Not Presential Duration: 01:00

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
2	Personas evaluation	Other assessment	Face-to-face	00:10	1%	/ 10	CE13
2	Individual presentation of personas	Individual presentation	Face-to-face	00:20	2%	/ 10	CE13
4	Individual presentation of principles of Design for All	Individual presentation	Face-to-face	00:45	2%	/ 10	CE13
4	Desgin for All evaluation	Other assessment	Face-to-face	00:10	1%	/ 10	CE13
5	Standard overview evaluation	Other assessment	Face-to-face	00:15	1%	/ 10	CE13
6	One accessibility standard evaluation (discussion)	Individual presentation	Face-to-face	00:30	5%	/ 10	CE14
7	Test 1	Written test	No Presential	01:00	10%	/ 10	CE13
7	One accessibility standard evaluation	Other assessment	Face-to-face	00:15	1%	/ 10	CE14
8	Delivery of exercise 1	Individual work	No Presential	00:00	15%	/ 10	CE14
8	One accessibility standard evaluation (discussion)	Individual presentation	Face-to-face	00:30	5%	/ 10	CE14
10	Delivery of exercise 2	Individual work	No Presential	00:00	20%	/ 10	CE14
10	State of the art in ICT accessibility evaluation	Other assessment	Face-to-face	00:10	1%	/ 10	CE13 CE14 CG13
12	Human-centred design evaluation	Other assessment	Face-to-face	00:15	1%	/ 10	CE14
14	Classroom presentation of exercise 3	Individual presentation	Face-to-face	02:00	5%	/ 10	CE13 CE14 CG13
15	Classroom presentation of exercise 3	Individual presentation	Face-to-face	02:00	5%	/ 10	CE14 CG13 CE13

15	Delivery of exercise 3	Individual work	No Presential	00:00	15%	/ 10	CE13 CE14 CG13
17	Test 2	Written test	No Presential	01:00	10%	/ 10	CG13 CE14

6.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	One accessibility standard evaluation (discussion)	Individual presentation	Face-to-face	00:30	5%	/ 10	CE14
8	Delivery of exercise 1	Individual work	No Presential	00:00	15%	/ 10	CE14
8	One accessibility standard evaluation (discussion)	Individual presentation	Face-to-face	00:30	5%	/ 10	CE14
10	Delivery of exercise 2	Individual work	No Presential	00:00	20%	/ 10	CE14
15	Delivery of exercise 3	Individual work	No Presential	00:00	15%	/ 10	CE13 CE14 CG13
17	Test 1	Written test	No Presential	01:00	10%	/ 10	CE13
17	Presentation of exercise 3	Individual presentation	Face-to-face	02:00	20%	/ 10	CE13 CE14 CG13
17	Test 2	Written test	No Presential	01:00	10%	/ 10	CG13 CE14

6.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Test 1	Written test	Face-to-face	01:00	10%	/ 10	CE13
Test 2	Written test	Face-to-face	01:00	10%	/ 10	CE14 CG13
Delivery of exercise 1	Individual work	Face-to-face	00:00	15%	/ 10	CE14
Delivery of exercise 2	Individual work	Face-to-face	00:00	20%	/ 10	CE14
Delivery of exercise 3	Individual work	Face-to-face	00:00	15%	/ 10	CE13 CE14 CG13
Presentation of exercise 3	Individual presentation	Face-to-face	02:00	20%	/ 10	CE13 CE14 CG13

6.2. Assessment criteria

The assessment of this module is divided into two parts: theory and practice. Both parts have to be passed in order to pass the module. The grades obtained in theory and practice are combined as described in the section on evaluation activities.

Theory

The theoretical part of the module contains different assessments: there will be two test-based assessments; there is going to be assessment of the performance of the collaborative learning sessions that will be part of the study of accessibility standards; there will be short in-class evaluations during the semestee

Practical work

The practical work consists of 3 exercises:

- Exercise 1: a document containing change proposals for an accessibility standard.
- Exercise 2: an accessibility assessment of an ICT product, using the standard studied during collaborative learning.
- Exercise 3: state of the art on one topic related to ICT accessibility. Students will make a short presentation in the classroom.

Assessment procedure

a) Continuous evaluation

The module will be assessed in a scale of 10 points, divided into theory and practical exercises. To pass the complete module it will be necessary to obtain a minimum of 3/10 point in theory and 3/10 points in the exercises.

All the practical exercises are mandatory and will be graded according to the section on evaluation activities.

The dates for the publication of grades and the ulterior exam revision will be notified as part of the corresponding exam. The exam revision will be made based on prior enquiries made by the students.

b) Non-continuous evaluation

In the case of non-continuous evaluation, there will be a theory exam and a classroom presentation of exercise 3 in week 17. The three exercises have to be delivered in the same time period as the one defined for continuous

evaluation. The student will also have to attend the two collaborative sessions (jigsaw) described above.

c) Extraordinary evaluation period (July)

In the extraordinary evaluation period (July) the theory tests will be repeated and the pending exercises can be delivered again. The participation in collaborative learning and in-class activities will not be re-assessed, so the grades received previously will be reused.

The grades obtained will apply the same weights as described for continuous evaluation.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Don't make me think!: Revisited. A Common Sense Approach to Web Usability	Bibliography	Krug, S. New Riders, 3rd edition ISBN: 978-0321965516, Jan. 2014
The Principles of Universal Design	Bibliography	Connell, B.R.; Jones, M.; Mace, R.; Mueller, J.; Mullick, A.; Ostroff, E.; Sanford, J.; Steinfeld, E.; Story, M.; Vanderheiden, G. Version 2.0. North Carolina State University. Abril 1997. http://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciples.htm
Information technology -- User interface accessibility -- Part 1: User accessibility needs	Bibliography	International Organization for Standardization (ISO), International Electrotechnical Commission (IEC). ISO/IEC 29138-1:2018. (Technical report ISO/IEC TR 29138-1, 2009, can be accessed at http://jtc1access.org/TR29138.htm)

El modelo de la diversidad. La Bioética y los Derechos Humanos como herramientas para alcanzar la plena dignidad en la diversidad funcional	Bibliography	Palacios, A.; Romañach, J. Ediciones Diversitas, ISBN: 8496474402, 2007.
A Web for Everyone. Designing accessible user experiences	Bibliography	Horton, S.; Quesenbery, W. Rosenfeld. 2014.
SIDAR	Web resource	Fundación Sidar - Acceso Universal: http://www.sidar.org, España. 2019

8. Other information

8.1. Other information about the subject

Exercises cannot been done just copying from other sources. Personal writing and analysis work by the student should be included. Failing to do this, implies plagiarism, which is not allowed at this University and will lead to not passing the exercise involved (grade will be 0).