# ANX-PR/CL/001-01

# LEARNING GUIDE

## SUBJECT

**103000882 - Assistive Products**

## DEGREE PROGRAMME

10AZ - Master Universitario En Innovación Digital

## ACADEMIC YEAR & SEMESTER

2021/22 - Semester 1

# Index

## Learning guide

# 1. Description

## 1.1. Subject details

| | |
|---|---|
| **Name of the subject** | 103000882 - Assistive Products |
| **No of credits** | 4.5 ECTS |
| **Type** | Optional |
| **Academic year ot the programme** | Second year |
| **Semester of tuition** | Semester 3 |
| **Tuition period** | September-January |
| **Tuition languages** | English |
| **Degree programme** | 10AZ - Master Universitario en Innovación Digital |
| **Centre** | 10 - Escuela Tecnica Superior De Ingenieros Informaticos |
| **Academic year** | 2021-22 |

# 2. Faculty

## 2.1. Faculty members with subject teaching role

| Name and surname | Office/Room | Email | Tutoring hours * |
|---|---|---|---|
| Jose Luis Fuertes Castro | 4307 | joseluis.fuertes@upm.es | Tu - 17:00 - 20:00<br>W - 12:00 - 15:00<br>Please confirm appointment via email |
| Loic Antonio Martinez Normand (Subject coordinator) | 3352 | loic.mnormand@upm.es | Tu - 13:00 - 15:00<br>Th - 13:00 - 15:00<br>F - 13:00 - 15:00<br>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. Prior knowledge recommended to take the subject

### 3.1. Recommended (passed) subjects

- Programming Of User Interfaces

- Evaluation Of Interactive Systems

- Introduction To Human-computer Interaction

### 3.2. Other recommended learning outcomes

The subject - other recommended learning outcomes, are not defined.

## 4. Skills and learning outcomes *

### 4.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CB07 - Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio

CB08 - Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios

CB09 - Que los estudiantes sepan comunicar sus conclusiones y los conocimientos y razones últimas que las sustentan a públicos especializados y no especializados de un modo claro y sin ambigüedades

CE-DIPO01 - Capacidad para conceptualizar, diseñar y desarrollar la interacción persona-ordenador de productos y servicios innovadores

CE-DIPO02 - Capacidad para evaluar la interacción persona-ordenador de productos y servicios de alto valor innovador

CE-DIPO03 - Habilidad para hacer conexiones entre los deseos y necesidades del consumidor o cliente y lo que la tecnología puede ofrecer

CG03 - La capacidad de usar la lengua inglesa de manera competente, es decir, con capacitación para tareas complejas de trabajo y estudio.

CG06 - Capacidad para gestionar la información.

### 4.2. Learning outcomes

RA26 - Evaluate and implement systems that use accessibility APIs

RA25 - Understand the APIs for interoperability between IT and Assistive Products

RA20 - Evaluate the usability and accessibility of prototypes

RA22 - Understand the concept and types of assistive products

* 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.

## 5. Brief description of the subject and syllabus

### 5.1. Brief description of the subject

An **assistive product** is any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability for participation; to protect, support, train, measure or substitute for body functions, structures and activities; or to prevent impairments, activity limitations or participation restrictions.

This course will first describe the assistive products that are normally used by persons with disabilities to use ICT products and services. It will then explain how ICT can interoperate with assistive products through the use of accessibility APIs of operating systems

## 5.2. Syllabus

1. Assistive products

   1.1. Assistive products: concept

   1.2. Assistive products: classification

2. Interoperability between information technology and assistive products

   2.1. Interoperability APIs

   2.2. Evaluation of the use of interoperability APIs

   2.3. Programming user interfaces with interoperability APIs

# 6. Schedule

## 6.1. Subject schedule*

| Week | Face-to-face classroom activities | Face-to-face laboratory activities | Distant / On-line | Assessment activities |
|---|---|---|---|---|
| 1 | **Course presentation. Introduction to Assistive Products. Schedule of evaluation activities**<br>Duration: 02:00 | | **Course presentation. Introduction to Assistive Products. Schedule of evaluation activities**<br>Duration: 02:00 | |
| 2 | **Flipped classroom: classification of assistive products**<br>Duration: 02:00 | | **Flipped classroom: classification of assistive products**<br>Duration: 02:00 | **Active participation in flipped classroom**<br>Continuous assessment<br>Presential<br>Duration: 00:30 |
| 3 | **Workshop: using built-in mobile assistive products**<br>Duration: 02:00 | | **Workshop: using built-in mobile assistive products**<br>Duration: 02:00 | **Active participation in workshop**<br>Continuous assessment<br>Presential<br>Duration: 00:30 |
| 4 | **Seminar: working on individual exercise on one assistive product**<br>Duration: 02:30 | | **Seminar: working on individual exercise on one assistive product**<br>Duration: 02:30 | |
| 5 | | | | **Presentation of one Assistive Product**<br>Continuous assessment<br>Presential<br>Duration: 02:30 |
| 6 | **Flipped classroom: IT-AT Interoperability (ISO 13066-1)**<br>Duration: 02:00 | | **Flipped classroom: IT-AT Interoperability (ISO 13066-1)**<br>Duration: 02:00 | **Active participation in flipped classroom**<br>Continuous assessment<br>Presential<br>Duration: 00:30 |
| 7 | **Seminar: working on analysing one Accessibility API**<br>Duration: 02:30 | | **Seminar: working on analysing one Accessibility API**<br>Duration: 02:30 | |
| 8 | | | | **Presentation of one Accessibility API**<br>Continuous assessment<br>Presential<br>Duration: 02:30 |
| 9 | **Workshop: testing the use of Accessibility API**<br>Duration: 02:00 | | **Workshop: testing the use of Accessibility API**<br>Duration: 02:00 | **Active participation in workshop**<br>Continuous assessment<br>Presential<br>Duration: 00:30 |

| | | | | |
|---|---|---|---|---|
| 10 | **Seminar: working on exercise of testing use of Accessibility API**<br>Duration: 02:30 | | **Seminar: working on exercise of testing use of Accessibility API**<br>Duration: 02:30 | |
| 11 | | | | **Presentation of Testing the use of Accessibility API**<br><br>Continuous assessment<br>Presential<br>Duration: 02:30 |
| 12 | **Workshop: using one Accessibility API**<br>Duration: 02:00 | | **Workshop: using one Accessibility API**<br>Duration: 02:00 | **Active participation in workshop**<br><br>Continuous assessment<br>Presential<br>Duration: 00:30 |
| 13 | **Seminar: working on programming with Accessibility API**<br>Duration: 02:30 | | **Seminar: working on programming with Accessibility API**<br>Duration: 02:30 | |
| 14 | **Seminar: working on programming with Accessibility API**<br>Duration: 02:30 | | **Seminar: working on programming with Accessibility API**<br>Duration: 02:30 | |
| 15 | | | | **Presentation of programming with Accessibility API**<br><br>Continuous assessment<br>Presential<br>Duration: 02:30<br><br>**Program developed using accessibility API**<br><br>Continuous assessment<br>Not Presential<br>Duration: 00:00<br><br>**Exam**<br><br>Final examination<br>Presential<br>Duration: 02:00 |
| 16 | | | | |
| 17 | | | | |

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.

# 7. Activities and assessment criteria

## 7.1. Assessment activities

### 7.1.1. Continuous assessment

| Week | Description | Modality | Type | Duration | Weight | Minimum grade | Evaluated skills |
|---|---|---|---|---|---|---|---|
| 2 | Active participation in flipped classroom | | Face-to-face | 00:30 | 5% | 0 / 10 | CG03<br>CG06<br>CE-DIPO03<br>CB06 |
| 3 | Active participation in workshop | | Face-to-face | 00:30 | 5% | / 10 | CE-DIPO03<br>CB06 |
| 5 | Presentation of one Assistive Product | | Face-to-face | 02:30 | 15% | / 10 | CB09<br>CG03<br>CG06 |
| 6 | Active participation in flipped classroom | | Face-to-face | 00:30 | 5% | 0 / 10 | CE-DIPO03<br>CB06<br>CG03<br>CG06 |
| 8 | Presentation of one Accessibility API | | Face-to-face | 02:30 | 15% | / 10 | CE-DIPO03<br>CB06<br>CB08<br>CB09<br>CG03 |
| 9 | Active participation in workshop | | Face-to-face | 00:30 | 5% | / 10 | CB06 |
| 11 | Presentation of Testing the use of Accessibility API | | Face-to-face | 02:30 | 15% | / 10 | CE-DIPO02<br>CB08<br>CB09<br>CG03 |
| 12 | Active participation in workshop | | Face-to-face | 00:30 | 5% | / 10 | CE-DIPO02<br>CE-DIPO03<br>CB06<br>CB07<br>CE-DIPO01<br>CB08 |
| 15 | Presentation of programming with Accessibility API | | Face-to-face | 02:30 | 10% | / 10 | CB09<br>CG03<br>CG06 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Program developed using accessibility API | | No Presential | 00:00 | 20% | / 10 | CE-DIPO01<br>CE-DIPO02<br>CE-DIPO03<br>CB06<br>CB07<br>CB08 |

### 7.1.2. Final examination

| Week | Description | Modality | Type | Duration | Weight | Minimum grade | Evaluated skills |
|---|---|---|---|---|---|---|---|
| 15 | Exam | | Face-to-face | 02:00 | 100% | / 10 | CE-DIPO01<br>CE-DIPO02<br>CE-DIPO03<br>CB06<br>CB07<br>CB08<br>CB09<br>CG03<br>CG06 |

### 7.1.3. Referred (re-sit) examination

| Description | Modality | Type | Duration | Weight | Minimum grade | Evaluated skills |
|---|---|---|---|---|---|---|
| Exam (extraordinary - July) | | Face-to-face | 02:00 | 100% | / 10 | CE-DIPO02<br>CE-DIPO03<br>CB06<br>CB07<br>CB08<br>CB09<br>CG03<br>CG06 |

### 7.2. Assessment criteria

It is strongly recommended to follow the continuous evaluation system, that grades the active participation of the student during the semester in different types of activities: cooperative learning, inverted classroom, individual presentations and individual exercises. This continuous evaluation system implies attending all the sessions. In addition, attendance to the visits is mandatory.

If the student is unable to follow the continuous evaluation system, then he or she must perform a written exam that covers all the contents of the course.

In this first semester of the academic year 2020-21, and due to the COVID-19 situation, academic activities are scheduled to be online, unless the pandemic conditions improve substantially. That means that "face to face" evaluation activities will be performed online, during teleconferences.

## 8. Teaching resources

### 8.1. Teaching resources for the subject

| Name | Type | Notes |
|---|---|---|
| ISO 9999:2016 Assistive products for persons with disability -- Classification and terminology | Bibliography | International Standard that defines assistive products and provides a classification |
| ISO/IEC 13066-1:2011 Information technology -- Interoperability with assistive technology (AT) -- Part 1: Requirements and recommendations for interoperability | Bibliography | International Standard defining the interoperability APIs between IT and Assitive Products |
| ISO/IEC TR 13066-2:2016 Information technology -- Interoperability with assistive technology (AT) -- Part 2: Windows accessibility application programming | Bibliography | Technical Report describing the accessibility API of Microsoft Windows<br /> |

| | | |
|---|---|---|
| interface (API) | | |
| ISO/IEC TR 13066-3:2012 Information technology -- Interoperability with assistive technology (AT) -- Part 3: IAccessible2 accessibility application programming interface (API) | Bibliography | Technical Report describing the iAccessible2 accessibility API<br /> |
| ISO/IEC TR 13066-4:2015 Information technology -- Interoperability with assistive technology (AT) -- Part 4: Linux/UNIX graphical environments accessibility API | Bibliography | Technical Report describing the accessibility API of Linux/UNIX |
| ISO/IEC TR 13066-6:2014 Information technology -- Interoperability with Assistive Technology (AT) -- Part 6: Java accessibility application programming interface (API) | Bibliography | Tecnical Report describing the Java accessibility API |
| Accessible Rich Internet Applications (WAI-ARIA) 1.1 | Web resource | W3C Recommendation 14 December 2017<br /> https://www.w3.org/TR/wai-aria/ |

# 9. Other information

## 9.1. Other information about the subject

**Classroom activities in academic year 2021-22**

The current COVID-19 pandemic situation restricts the capacity of the classrooms in the School. Depending on the number of enrolled students it might be necessary to split the class in two groups that will come to the School in alternate days. The School classrooms have teleconference equipment that enables remote participation in the class. In this situation some students will be in the classroom (column "Distant / On-line" in the schedule) and other students will connect remotely (column "face-to-face" in the schedule).

If the pandemic situation improves and the University is allowed to use the classrooms at their full capacity, then all students will be able to attend the face to face sessions together.

And in the improbable situation of a worsening of the pandemic situation, all classes would be online.

**Sustainable development goals (SDGs)**

The goal of this course is to learn about assistive products, that enable access of persons with disabilities to ICT, increasing their inclusion possibilities. Taking this into account, and considering the recommendations from the United Nations on the relationship between the SDGs and accessibility, this course is related to the following sustainable development goals:

- **Goal 4 quality education** - to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. In today's education, interactive learning systems are essential, and they need to be accessible and to be compatible with assistive products to enable the education of persons with disabilities.
- **Goal 8 decent work and economy growth** - to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Today there are many job-related activities

that rely on information and communication technology. This technology needs to be accessible and compatible with assistive products to enable inclusion in the workplace.

- **Goal 10 reduced inequalities** - to reduce inequality within and among countries. To increase inclusion of all persons in society, all interactive systems designed for citizen participation need to be accessible and be compatible with assistive products.