



INTERNATIONAL
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LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingeniería y Sistemas
de Telecomunicación

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

595010252 - Introduction To Artificial Intelligent In The Cloud

DEGREE PROGRAMME

59ET - Doble Grado En Ing.Electronica De Comunicaciones Y En Ing.Telematica

ACADEMIC YEAR & SEMESTER

2023/24 - Semester 2



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1. Description

1.1. Subject details

Name of the subject	595010252 - Introduction To Artificial Intelligent In The Cloud
No of credits	4.5 ECTS
Type	Optional
Academic year of the programme	Third year
Semester of tuition	Semester 6
Tuition period	February-June
Tuition languages	English
Degree programme	59ET - Doble Grado en Ing.electronica de Comunicaciones y en Ing.telematica
Centre	59 - Escuela Tecnica Superior De Ingenieria Y Sistemas De Telecomunicacion
Academic year	2023-24

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Juana Maria Gutierrez Arriola	A7008	juana.gutierrez.arriola@upm.es	Sin horario. Las tutorías se pueden consultar en la página web de la ETSIST

Eduardo Juarez Martinez	A4204	eduardo.juarez@upm.es	Sin horario. Las tutorías se pueden consultar en la página web de la ETSIST
Fernando Pescador Del Oso (Subject coordinator)	A4211	fernando.pescador@upm.es	Sin horario. Las tutorías se pueden consultar en la página web de la ETSIST

* 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

CE B2 - Conocimientos básicos sobre el uso y programación de los ordenadores, sistemas operativos, bases de datos y programas informáticos con aplicación en ingeniería.

CE TEL01 - Capacidad para aprender de manera autónoma nuevos conocimientos y técnicas adecuados para la concepción, el desarrollo o la explotación de sistemas y servicios de telecomunicación.

CE TEL07 - Conocimiento y utilización de los fundamentos de la programación en redes, sistemas y servicios de telecomunicación.

CE TL07 - Capacidad de programación de servicios y aplicaciones telemáticas, en red y distribuidas.

CG 11 - Habilidades para la utilización de las Tecnologías de la Información y las Comunicaciones.

3.2. Learning outcomes

RA1 - RA232 - Se concretarán para cada asignatura optativa o para la realización de prácticas en empresas

RA803 - Explicar conceptos generales de informática en la nube y los servicios principales disponibles con Microsoft Azure

RA804 - Explicar las características de seguridad y seguridad en red de Microsoft Azure

RA805 - Explicar los conceptos de datos relacionales y no relacionales en Azure

RA808 - Describir las características de las cargas de trabajo de la visión artificial, el procesamiento del lenguaje natural y la AI conversacional en Azure

RA806 - Identificar los componentes de un almacenamiento de datos moderno en Azure

RA807 - Describir los principios fundamentales del aprendizaje automático en Azure

* 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

The course is divided into three modules that correspond to three basic Microsoft certifications that are part of the Microsoft Learn for Educators program.

The first module introduces the concepts and services available in Microsoft Azure. AZ-900 Certification (<https://docs.microsoft.com/es-es/learn/certifications/exams/az-900>)

The second module exposes the fundamental concepts of cloud databases and Microsoft Azure data services. DP-900 Certification (<https://docs.microsoft.com/es-es/learn/certifications/exams/dp-900>)

The third module introduces artificial intelligence and Microsoft Azure services that can be used to create AI solutions. AI-900 Certification (<https://docs.microsoft.com/es-es/learn/certifications/exams/ai-900>)

Students who follow the subject will take the official certification exams organized by the university within the Microsoft Learn for Educators program free of charge.

4.2. Syllabus

1. Azure Fundamentals
 - 1.1. Azure main concepts
 - 1.2. Most important services of Azure
 - 1.3. Most important administrative solutions and tools in Azure
 - 1.4. General concepts of security in Azure
 - 1.5. Describe the features of identity, governance and privacy
2. Introduction to Microsoft Azure Data
 - 2.1. Explore the Data Base concepts
 - 2.2. Relational data in Azure
 - 2.3. Non relational data in Azure
 - 2.4. Explore new data storage systems in Azure
3. Introduction to Microsoft Azure AI
 - 3.1. Introduction to AI
 - 3.2. Automatic Learning
 - 3.3. Artificial Vision
 - 3.4. Natural Language Processing (NLP)
 - 3.5. Conversational AI

5. Schedule

5.1. Subject schedule*

Week	Classroom activities	Laboratory activities	Distant / On-line	Assessment activities
1	Azure fundamentals Duration: 01:00 Lecture	Azure Practices Duration: 02:00 Laboratory assignments		
2	Azure fundamentals Duration: 01:00 Lecture	Azure Practices Duration: 02:00 Laboratory assignments		
3	Azure fundamentals Duration: 01:00 Lecture	Azure Practices Duration: 02:00 Laboratory assignments		
4	Azure fundamentals Duration: 01:00 Lecture	Data exercises Duration: 02:00 Laboratory assignments		
5	Azure Data Duration: 01:00 Lecture	Data exercises Duration: 01:00 Laboratory assignments		Evaluation Azure Fundamentals Online test Continuous assessment Presential Duration: 01:00
6	Azure Data Duration: 01:00 Lecture	Data exercises Duration: 02:00 Laboratory assignments		
7	Azure Data Duration: 01:00 Lecture	Data exercises Duration: 02:00 Laboratory assignments		
8	Azure Data Duration: 01:00 Lecture	Data exercises Duration: 02:00 Laboratory assignments		
9	Azure AI Duration: 01:00 Lecture	AI practices Duration: 01:00 Laboratory assignments		Evaluation Azure Data Online test Continuous assessment Presential Duration: 01:00
10	Azure AI Duration: 01:00 Lecture	AI practices Duration: 02:00 Laboratory assignments		
11	Azure AI Duration: 01:00 Lecture	AI practices Duration: 02:00 Laboratory assignments		
12	Azure AI Duration: 01:00 Lecture	AI practices Duration: 02:00 Laboratory assignments		

13	Summary Duration: 03:00 Lecture			
14				
15				
16				
17				Evaluation Azure AI Written test Continuous assessment Presential Duration: 01:00 Global Exam DP900 Online test Final examination Presential Duration: 01:00 Global Exam AZ900 Written test Final examination Presential Duration: 01:00 Evaluación Azure AI Online test Final examination 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. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
5	Evaluation Azure Fundamentals	Online test	Face-to-face	01:00	34%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11
9	Evaluation Azure Data	Online test	Face-to-face	01:00	33%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11
17	Evaluation Azure AI	Written test	Face-to-face	01:00	33%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11

6.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Global Exam DP900	Online test	Face-to-face	01:00	33%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11
17	Global Exam AZ900	Written test	Face-to-face	01:00	34%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11
17	Evaluación Azure AI	Online test	Face-to-face	01:00	33%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11

6.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Final Exam all modules	Written test	Face-to-face	03:00	100%	5 / 10	CE B2 CE TEL01 CE TEL07 CE TL07 CG 11

6.2. Assessment criteria

Progressive evaluation

During the semester, three evaluation activities will be carried out, one for each of the topics in which the subject is divided.

The subject can only be passed by progressive evaluation if at least 5 points are obtained by adding the weighted scores of the different evaluation tests. The exams will be done by the official certification exams. The qualification 5.0 will be equivalent to 700 points in the certification exam. The qualification of 10.0 will be equivalent to 1000 points in the certification exam.

For the global and extraordinary evaluation, the topics in which more than 5 points have been obtained will be released.

Global evaluation

The student who does not pass (less than 5 points) any of the first two evaluation tests will be able to recover them on the date on which the third is carried out and which is marked by the Subdirección de Ordenación Académica. Students who wish to improve their marks in one of the first two tests can also take these make-up exams.

Extraordinary exam

In the extraordinary exam, students who have not passed any of the evaluation exams will have the possibility of recovering them on the date set by the Head of Studies for the extraordinary exam.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Moodle	Others	B-learning platform
Virtual Lab	Web resource	Microsoft virtual platform
Microsoft Certification Description	Web resource	https://docs.microsoft.com/es-es/Learn/
Slices	Others	

8. Other information

8.1. Other information about the subject

The calendar that appears in the guide is indicative since it does not include holidays. The specific dates will be published in the Moodle of the subject.

The subject is related to SDG4 "Ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all". Specifically, with the goal "4.4 By 2030, considerably increase the number of young people and adults who have the necessary skills, in particular technical and professional, to access employment, decent work and entrepreneurship".

The subject is related to SDG9 "Build resilient infrastructure, promote sustainable industrialization and foster innovation". Specifically, with part of the target "9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in the least developed countries by 2030.