ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103000900 - Societal/legal/ethical Aspects In Data Science

DEGREE PROGRAMME

10BA - Master Universitario En Ciencia De Datos

ACADEMIC YEAR & SEMESTER

2022/23 - Semester 2

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	103000900 - Societal/legal/ethical Aspects In Data Science
No of credits	3 ECTS
Type	Compulsory
Academic year ot the programme	First year
Semester of tuition	Semester 2
Tuition period	February-June
Tuition languages	English
Degree programme	10BA - Master Universitario en Ciencia de Datos
Centre	10 - Escuela Tecnica Superior De Ingenieros Informaticos
Academic year	2022-23

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Victor Rodriguez Doncel (Subject coordinator)	D3205	victor.rodriguez@upm.es	M - 10:00 - 13:00 Tu - 10:00 - 13:00
Asuncion De Maria Gomez Perez		asunciondemaria.gomez@upm.es	Sin horario.

* 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

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

CECD09 - Capacidad para actuar con los principios éticos y legales relacionados con la manipulación de datos según el ámbito de aplicación

CG10 - Apreciación de los límites del conocimiento actual y de la aplicación práctica de la última tecnología

3.2. Learning outcomes

RA38 - Ability to assess the societal, legal and ethical impact of Artificial Intelligence and data processing projects

RA37 - Knowledge of the European and national legal framework of AI and data processing

* 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

Virtually every data scientist and AI professional will have to cope with legal and ethical issues during the professional career -especially in the health domain.

This has been always the case, but nowadays, the advances on AI algorithmics and the massive availability of data have made some questions more urgent. Beyond speculation, the European Union has published new guidelines on developing ethical AI that do also have a practical character. This course provides the student with practical and theoretical tools to address these issues.

In the first place, the students will be given some general notions on the legal framework in Europe of AI and data

processing, necessary to avoid breaching the law and necessary to exercise their rights. Students will learn on patents, trademarks, copyright, licenses and software registries but also on data protection and how to handle personal data: these skills are a must in modern AI professionals. The Open Data and Open Software paradigms will also be studied, both from a theoretical and a practical perspectives. The student will also learn to identify other recurrently appearing legal issues in the exercise of the data scientist profession, including the forthcoming AI regulation.

In the second place, the students following this course will also acquire skills to make critical assessments of AI-intensive and big data projects considering legal, ethical, and societal aspects. From a theoretical perspective, critical thinking will be appreciated and fostered in students, from a practical perspective, the official positions of the European Commisions will be applied with real use cases.

4.2. Syllabus

1. Introduction. Overview of issues raised by Artificial Intelligence.
2. Ethics of AI and Data Science
    2.1. Ethical theories
    2.2. Ethical Assessment of AI Projects
    2.3. Responsible Research and Innovation. Professional ethics.
3. European legal framework of AI and data science
    3.1. Intellectual Property Rights
    3.2. Privacy and Data Protection
    3.3. Law as data
    3.4. Regulation of AI
4. Societal questions
    4.1. Bias, explainability and traceability
    4.2. Surveillance, propaganda, data and democracy
    4.3. The future of AI

5. Schedule

5.1. Subject schedule*

Week	Classroom activities	Laboratory activities	Distant / On-line	Assessment activities
1	**Lecture. START OF BLOCK 1** Duration: 02:00 **Lecture** Duration: 01:00			
2	**Lecture. START OF BLOCK 2** Duration: 02:00 **Lecture** Duration: 01:00			
3	**Lecture** Duration: 02:00 **Lecture** Duration: 01:00			
4	**Lecture** Duration: 02:00 **Lecture START OF BLOCK 3** Duration: 01:00			**Continuous evaluation block 2** Continuous assessment Presential Duration: 00:00
5	**Lecture** Duration: 02:00 **Lecture** Duration: 01:00			**Delivery of report and its eventual presentation** Continuous assessment Presential Duration: 02:00
6	**Lecture** Duration: 02:00 **Lecture** Duration: 01:00			**Continuous evaluation block 3** Continuous assessment Presential Duration: 00:00

7	**Lecture START OF BLOCK 4** Duration: 02:00 **Lecture** Duration: 01:00			
8	**Lecture** Duration: 02:00 **Lecture** Duration: 01:00			**Delivery of report and its eventual presentation.** Continuous assessment Not Presential Duration: 00:00
9				**Continuous Evaluation Test** Continuous assessment Presential Duration: 02:00
10				
11				
12				
13				
14				
15				
16				
17				**Exam** Final examination Presential Duration: 02:00

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
4	Continuous evaluation block 2		Face-to-face	00:00	15%	0 / 10	CG10 CB08 CECD09
5	Delivery of report and its eventual presentation		Face-to-face	02:00	20%	5 / 10	CG10 CB08 CECD09
6	Continuous evaluation block 3		Face-to-face	00:00	15%	0 / 10	CG10 CB08 CECD09
8	Delivery of report and its eventual presentation.		No Presential	00:00	20%	5 / 10	CG10 CB08 CECD09
9	Continuous Evaluation Test		Face-to-face	02:00	30%	5 / 10	CECD09 CG10 CB08

6.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Exam		Face-to-face	02:00	100%	5 / 10	CG10 CB08 CECD09

6.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

6.2. Assessment criteria

EVALUATION SYSTEM

There are three different evaluation activities:

- QUESTIONNAIRES. During the course, Moodle questionnaires will be open as in-class activities or homework tasks. (20%)
- GROUP WORK. This group work (4 students per group) will have an intermediate delivery (towards the middle of the course) and a final delivery. At the end of the course, there will be an oral presentation. (40%)
- GLOBAL EXAM. This final exam will consist of a Moodle questionnaire to be filled in during the exam time evaluating all the competencies of the course (a printed version will be available for students with no electronic device). (40%)

EVALUATION ONLY THROUGH GLOBAL EXAM

Notwithstanding the global exam (50%), students will have to deliver the work, even if individually, and will have to record a video to replace the oral presentation (50%).

EXTRAORDINARY EXAM

Notwithstanding the global exam (50%), students will have to deliver the work, even if individually, and will have to record a video to replace the oral presentation (50%).

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Textbook	Bibliography	Quinn, M. J. (2017). Ethics for the information age. Pearson.
Moodle	Bibliography	A collection of readings will be made available through the moodle platform. Additional recommended bibliography will be also referenced from Moodle.

8. Other information

8.1. Other information about the subject

Language

The course is delivered in English.