TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Ethics and Artificial Intelligence
Subject code	DOI-IMAT-421
Mainprogram	Bachelor's Degree in Mathematical Engineering and Artificial Intelligence
Involved programs	Grado en Ingeniería Matemática e Inteligencia Artificial [Fourth year]
Level	Reglada Grado Europeo
Quarter	Semestral
Credits	3,0 ECTS
Type	Obligatoria (Grado)
Department	Department of Industrial Organization
Coordinator	Dr. José Ángel Ceballos Amandi.
Schedule	It will be determined at the beginning of the course.
Office hours	It will be determined at the beginning of the course.

Teacher Information	
Teacher	
Name	María Reyes Calderón Cuadrado
Department	Departamento de Gestión Empresarial
EMail	mrcalderon@icade.comillas.edu

SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject
Contribution to the professional profile of the degree

That AI already currently has an important social impact, and in the near future this will be even greater, is indisputable. For this reason, technical training must necessarily go hand in hand with adequate ethical preparation.

However, to deal with situations of this nature, mere ethical sensitivity is not enough, which in most cases translates into assessments resulting from mere uncritical subjective intuitions. On the contrary, it is necessary to know how to rationally analyze situations, in order to anticipate the ethical implications that new situations will raise due to these technological developments. And always from the perspective of rational and well-founded justification of ethical criteria and evaluations.

Prerequisites

None..

Competencies - Objectives
Competences

GENERALES	
CG02	Capacidad de razonamiento abstracto y sentido crítico, así como de cálculo, modelado, simulación, optimización y predicción, para dar respuesta a los problemas planteados por la ciencia, la tecnología y la sociedad en general.
CG10	Capacidad para comprender y aceptar la diversidad social y cultural presente en las empresas y las organizaciones del entorno, como un componente enriquecedor personal y colectivo para desarrollar la convivencia entre las personas sin incurrir en discriminación por sexo, edad, religión, condición social, política y/o étnica.
CG14	Capacidad para integrar conocimiento multidisciplinar en un determinado proyecto o sistema.
CG15	- Capacidad para trabajar en un contexto internacional
ESPECÍFICAS	
CE05	Capacidad para discernir los aspectos éticos que subyacen a las tecnologías específicas de la titulación y al ejercicio profesional del ingeniero desde el prisma de los Objetivos de Desarrollo Sostenible, el respeto a los derechos fundamentales y de igualdad ante la ley, el respeto y promoción de los Derechos Humanos y a los principios de accesibilidad universal de las personas con discapacidad, como condiciones básicas para una sociedad basada en la convivencia y el diálogo.
CE19	Conocimiento de los requisitos de ciberseguridad, y en especial en la privacidad, en el entorno del análisis de datos para garantizar la seguridad de los datos.

Learning outcomes	
RA1	Identificar y gestionar conflictos, dilemas y problemas éticos, diseñando estrategias de resolución de los mismos
RA2	Identificar y evaluar críticamente los dilemas morales que pueden presentarse en el desempeño profesional
RA3	Conocer y distinguir modelos de resolución de los dilemas morales de la práctica profesional
RA4	Identificar y reflexionar sobre las posibilidades u obstáculos que las instituciones pueden imponer a las actuaciones profesionales éticas
RA5	Ser capaz de valorar adecuadamente y desde la responsabilidad el impacto social y medioambiental de tecnologías y formas de organización y producción
RA6	Saber promover la práctica profesional en el marco de la ética, poniéndose de manifiesto especialmente prácticas no discriminatorias y respetuosas con las personas

THEMATIC BLOCKS AND CONTENTS

Contents - Thematic Blocks

Thematic blocks:
 	
    1. Basic concepts of professional ethics.
    2. Professional ethical principles and ethical theories.

3. Ethical principles applicable in the design and development of AI.

4. Management, ownership and use of information.

5. Responsibilities derived from data analysis.

TEACHING METHODOLOGY

General methodological aspects of the subject

The working method combines expository sessions, always open to dialogue, with practical sessions dedicated to the debate of current professional issues related to the subject, and to the analysis of situations and cases extracted from reality.

To facilitate this second type of sessions and promote the active role of the student, real situations will be treated whenever possible, trying to connect them with other subjects of the degree.

The preparation and resolution of these cases and any other work will be used to carry out academic guidance work and monitoring of student learning, which is why tutoring is considered an irreplaceable part of the learning process.

In a general sense, the methodology is oriented towards a system based on continuous evaluation and the development of the indicated competencies.

In-class Methodology: Activities

Master classes	CG02, CG10, CG14, CG15, CE05, CE19
Practical cases	CG02, CG10, CG14, CG15, CE05, CE19
Group work and presentations	CG02, CG10, CG14, CG15, CE05, CE19

Non-Presential Methodology: Activities

Personal study	CG02, CG10, CG14, CG15, CE05, CE19
Group work	CG02, CG10, CG14, CG15, CE05, CE19
Cases analysis	CG02, CG10, CG14, CG15, CE05, CE19

SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS		
Clases magistrales expositivas y participativas	Casos prácticos	Tutorías para resolución de dudas
15.00	15.00	5.00
NON-PRESENTIAL HOURS		
Estudio personal	Trabajos	
25.00	30.00	

ECTS CREDITS: 3,0 (90,00 hours)

EVALUATION AND CRITERIA

The use of AI to produce full assignments or substantial parts thereof, without proper citation of the source or tool used, or without explicit permission in the assignment instructions, will be considered plagiarism and therefore subject to the University's General Regulations.

Evaluation activities	Evaluation criteria	Weight
Final exam, unique and non-breakable. It will consist of a written test on the theoretical content seen in the subject, and its application.	Will be evaluated: • Understanding of concepts. • Application of concepts to the resolution of practical problems. • Analysis and interpretation of the results obtained in solving problems. • Presentation.	50
Individual or group work/project/practical case	• Understanding of the concepts. • Application of concepts to the resolution of practical problems. • Ability to analyze and interpret the results obtained in solving problems. • In the works, the ability to synthesize, the ability to respond to the questions posed, the clarity of the conclusions and the visual quality of the presentation will be especially valued.	25
Oral presentation	• Comprehensive explanation of the concepts. • Ability to explain the application of concepts to the resolution of practical problems. • Ability to communicate the analysis and interpretation of the results obtained in solving problems. • In the works, the ability to synthesize, the ability to respond to the questions posed, the clarity of the conclusions and the visual quality of the presentation will be especially valued.	25

Ratings

GRADING CRITERIA:

• For written assignments (individual, group, etc.), submission of the document on time and in the correct manner is considered an essential requirement for presentation and defense before the professor. The grade for the assignment will be the same as the defense.

- Failure to comply with the deadline or formal requirements will result in the denial of the defense and the subsequent failure of the assignment.
- The average grade for assignments, cases, or reports will only be determined when the final exam is passed (minimum passing grade: 5.00). If the exam is failed, the course will be graded with its grade.
- Committing a serious academic offense, such as plagiarizing previously published materials or copying an exam or other assessed activity, may result in disciplinary proceedings and the loss of any sittings established by the faculty regulations.
- For written assignments, a Turnitin score above 30% will require justification.
- **COLLABORATION WITH AI (Level 3)**:
  - AI can be used to assist in completing the assignment, including idea generation, writing, feedback, and assessment. Students must critically evaluate and modify the outputs suggested by the AI, demonstrating their understanding.
  - You can use AI to perform specific tasks, such as writing texts, refining and assessing your work. You must critically evaluate and modify any AI-generated content you use.
  - Misuse of AIs by students will be considered a serious offense, according to the University's General Regulations, art. 168.2.e: "carrying out actions intended to falsify or defraud academic performance assessment systems."
  - The consequences of this may include "temporary expulsion for up to three months or a ban from taking the exam in the next session, or the imposition of a sanction, in one or more subjects in which the student is enrolled, [...] in addition to a failing grade (0) in the respective subject, [...] [and] a ban from taking the exam in that subject in the next session."
  - The use of AI to create complete or relevant parts of papers, without citing the source or tool, or without being expressly permitted in the work description, will be considered plagiarism and regulated in accordance with the University's General Regulations.
- Unjustified absence from more than 15% of class sessions may result in the loss of the right to take the exam in the sessions established by the Faculty's regulations (Article 93.1 of the General Regulations).
- Failure to attend the first hour of a double class will result in the application of a failure to attend the entire session, regardless of whether the student attends the second hour.
- The professor will determine the attendance monitoring system at the beginning of the course and will periodically inform students of their progress.
- Cases, assignments, or reports submitted after the deadline will be considered unsubmitted.
- Failure to submit, present, or complete cases, assignments, reports, or exercises will result in a fail (zero) in the corresponding grading section.
- If the subject is failed in the regular session, the grades for the assignments, cases, reports, or exercises provided in this teaching guide and submitted in the regular session may be applied to the extraordinary grade. In this case, the student will only be required to complete the failed or unsubmitted assignments, cases, reports, or exercises.
- For our own students who are on an exchange abroad and must take an exam for the subject, or in any other case where class attendance is not required, the grading system will consist solely of a final theoretical exam on the content determined by the Area Coordinator. In these cases, the final grade will be the grade obtained on the exam.
- In the case of exchanges (Out), it is the student's responsibility to contact the instructor well in advance to specify the exam content.
- Unless otherwise stated, in all exam sessions, assignments, and exercises of any kind must have a grade of at least 5.00 out of 10.00 to pass.

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

- Villas, M.; Camacho, J.. Manual de Ética Aplicada en Inteligencia Artificial. Anaya. 2022

- Harris, Ch.E.; Pritchard, M.S.; Rabins, M.J., Engineering Ethics. Concepts and Cases. Wadsworth. 4th ed. 2009.

- Martin M.W.; Schinzinger R., Introduction to Engineering Ethics. McGraw-Hill Higher Education. 2nd ed. 2010.
- Johnson, D.G.; Wetmore, J.M. Technology and Society: Building our Sociotechnical Future (Inside Technology). MIT Press. 2008.
- Kallman, E.A.; Grillo, J.P. Ethical Decision Making & Information Technology: An Introduction with Cases. McGraw-Hill. 1996.

- Bilbao, G.; Fuertes, J.; Guibert, J.M. Ética para Ingenieros. Desclée De Brower. 2006.
- Etxeberría, X. Ética básica. Universidad de Deusto. 1998.
- Etxeberría, X. Temas básicos de ética. Desclée De Brower. 2002.
- Hortal, A. Ética general de las profesiones. Desclée De Brower. 2002.
- Hortal, A. Ética profesional y universidad. Universidad Católica Andrés Bello. 2007.

Complementary Bibliography

Updated bibliographic information may be provided throughout the course.