COMILLAS
UNIVERSIDAD PONTIFICIA
ICAI ICADE CIHS

Syllabus
2024 - 2025

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

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.
	Capacidad para comprender y aceptar la diversidad social y cultural presente en las empresas y las organizaciones del

CG10	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

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

- The teacher will communicate the characteristics of the exam and the correction and grading criteria with the necessary advance notice.
- The student may always request the grading rubric during exam reviews.
- In the case of test exams, the rubric is replaced by the explanation of the correctness or incorrectness of the answer.
- In the case of tests, the correction formula will always be specified.
- The final exam will be unique, and in no case will it be "breakable" into different exams.
- At the beginning of the course, the nature of the work, the delivery schedule and its weight in the grade of the corresponding section will be communicated.
- In tests or assignments presented in writing, a Turnitin index of 30% or higher will necessarily require justification.
- Cases, papers or reports delivered after the deadline will be considered undelivered.
- Failure to deliver or present cases, assignments or reports will result in failure (zero) in the corresponding grading section.
- No test or exercise may have a liberating nature applicable to the final exam.

- The average grade for cases, reports and exercises of any type will be taken only when the final exam is passed. Otherwise, the final grade for the subject will prevail as the one corresponding to the exam.
- Incurring a serious academic offense, such as plagiarism of previously published materials, or copying in the exam or other evaluated activity, may imply the opening of a disciplinary file and the loss of the calls established for this purpose by the center's regulations. .
- The improper use of ChatGPT, or any other IAG, by students will be considered a serious offense, according to the General Regulations of the University, art. 168.2.e: "carrying out actions aimed at falsifying or defrauding the academic performance evaluation systems." The consequences of this may be "temporary expulsion of up to three months or the prohibition of taking the exam in the next call to the imposition of the sanction, in one or several subjects in which the student is enrolled, [...] apart from suppose the grade of failure (0) in the respective subject, [...] [and] the prohibition of taking the exam for that subject in the next call."
- Failure to attend more than 15% of the sessions may result in the loss of exam rights in the calls determined by the Regulations.
- Failure to attend one of the hours of a double class will be counted as an absence from the entire session, regardless of whether or not the other is attended.
- At the beginning of the subject the teacher will determine the attendance control procedure.
- Except in the case of prior authorization, assignments, exercises or exams of any type that are not carried out will be graded zero.
- In the event of failing the subject in the regular session, the marks for the assignments, cases, reports or exercises provided for in this teaching guide and submitted in the regular session may be applied for the extraordinary grade. In such case, the student will only have to complete the assignments, cases, reports or exercises that were failed or not submitted.
- Unless expressly indicated otherwise, in all calls the exams, assignments and exercises of any type 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.

aspects related to privacy and data that you have accepted on your registration form by entering this website and clicking on "download"

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