COURSE DATA

Data Subject

Code	33287
Name	Philosophy and artificial intelligence
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1004 - Degree in Philosophy	Faculty of Philosophy and Educational Sciences	4	First term
1012 - Degree in Philosophy	Faculty of Philosophy and Educational Sciences	4	First term

Subject-matter

Degree	Subject-matter	Character
1004 - Degree in Philosophy	27 - Philosophy and artificial intelligence	Optional
1012 - Degree in Philosophy	26 - Philosophy and artificial intelligence	Optional

Coordination

Name	Department
LUQUE MARTIN, VICTOR JOSE	359 - Philosophy

SUMMARY

This course will make a historic journey on the issue of artificial intelligence, focusing on the origin and development of axiomatic systems and formal languages. In this line, the virtues and boundaries of these systems will be raised from their central elements (Turing Machines, algorithm, computability, etc.). On this basis, in a second part of the course we will explore its contemporary uses (big data, machine learning, simulations, etc.) and the dilemmas that, at both scientific and ethical and social level, they raise.

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PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Competences and contents of the first year of the Degree in Philosophy (in particular, familiarity with the English language to be able to read texts in that language).

OUTCOMES

1004 - Degree in Philosophy

- Be able to apply knowledge to work in a professional manner and have competences for preparing and defending arguments and for solving problems within the field of study.

- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.

- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

- Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.

- Ser respetuoso con la diferencia y la pluralidad evitando la discriminación por razones de género.

- Capacidad de comunicación profesional oral y escrita en las lenguas propias de la Universitat de València.

- Be able to communicate in a foreign language.

- Be able to obtain information from different primary and secondary sources.

- Be able to organise and plan work times.

- Acquire the capacity to pose and solve problems, as well as to make decisions, in a limited time.

- Be able to convey information, ideas, problems and solutions to others (experts or not).

- Be able to improve and develop professionally.

- Have critical and self-critical capacity.

- Know how to work in a team avoiding gender discrimination.

- Be able to handle the applications of information and communication technologies.

- Be able to take on social and ethical commitments.

- Be able to apply knowledge to practice.

- Be able to learn autonomously.

- Develop innovation and creativity.

- Be competent in the philosophical study of particular areas of research and human praxis, such as mind, knowledge, language, technology, science, society, culture, ethics, politics, law, religion, literature, arts and aesthetics, avoiding androcentric biases.

- Acquire a basic knowledge of the problems, texts and methods that philosophy has developed throughout its history and recognise possible androcentric biases.

- Be familiar with the ideas and arguments of the main philosophers and thinkers, extracted from their texts, and with the investigation of their traditions and schools, identifying the possible androcentric biases.

- Identify the fundamental issues that underlie any type of debate.

- Be able to apply the knowledge acquired to clarify or solve certain problems outside one's own field of knowledge.

- Expresar con precisión los resultados del análisis de problemas controvertidos y complejos.

- Identify and evaluate clearly and rigorously the arguments presented either in texts or orally.

- Be agile and efficient managing various sources of information: bibliographical, electronic and others.

- Acquire the learning skills needed to undertake further studies with an increasing degree of autonomy.

- Appreciate autonomy and independence of judgement.

- Recognise human fallibility.

LEARNING OUTCOMES

The student must show a clear understanding of the theoretical questions raised during the course, being able to expose and analyse them in depth. In addition, she must be capable of engaging intellectually on these issues, to be able to autonomous investigation and clarification of those issues.

DESCRIPTION OF CONTENTS

1. Axiomatic systems: their origin, history, and necessity

Historical survey of the formalization of language. Construction of axiomatic systems (from Aristotle to Gödel) and their use in the development of artificial intelligence.

2. Turing Machines

Analysis of the notion of computability. Scope and limits of Turing Machines.

3. Artificial Intelligence: relevance and projection

Big data, machine learning, simulations, etc., and their impact on our societies.

4. Philosophical issues related to artificial intelligence

The mind problem. The use of computers for the resolution of scientific questions (mathematical proof, simulations of physical systems, etc.). Ethical dilemmas derived from it in social and political areas.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Seminars	15,00	100
Tutorials	5,00	100
Development of individual work	20,00	0
Study and independent work	30,00	0
Readings supplementary material	30,00	0
Preparation of evaluation activities	10,00	0
Resolution of case studies	10,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

The theoretical classes will explain the concepts and main positions on each topic to treat. If necessary, the teacher will indicate the supplementary readings that are relevant to provide a better understanding of the topic. If the teacher thinks it is convenient, and depending on the number of students enrolled, she can opt for students to display their reflections in class, in memory format ordered, on the issues raised by the teacher in previous classes. The practical classes are intended to discuss and apply the notions exposed in the theoretical classes through several texts by authors and/or specific episodes related to the topics of this course. It can also be organized oral presentations by students on specific readings.

EVALUATION

The qualification of this course is obtained as follows:

- Final written proof of the topics discussed in the theoretical classes: up to 70% of the total note. It will consist of long answers, short answers, or a combination of both types.

- Text analysis (individual or group), active participation in practical classes, discussion groups, etc.: up to 30% of the total note.

- The fraudulent conduct of evaluation tests and plagiarism in research work will be considered under the ACGUV Regulation 108/2017.

REFERENCES

Basic

- Boden, M. A. 1996. Filosofía de la inteligencia artificial. Fondo de Cultura.
  M. A. Boden. 2016. AI: Its Nature and Future. Oxford University Press.
  Copeland, J. 1996. Inteligencia Artificial. Una introducción filosófica. Alianza Editorial S.A.
  Horgan, J. 1993. The Death of Proof. Scientific American, October: 92-103.
  Turing, A. M. 1950. Computing Machinery and intelligence. Mind, 59:433-460.
  Winsberg, E. 2010. Science in the Age of Computing Simulation. Chicago: The University of Chicago Press.

Additional

- Alcolea, J. 2002. La demostración matemática: problemática actual. Contrastes, Vol VII: 15-34.
  Bak-Coleman, J. et al. 2021. Stewardship of global collective behavior. Proceedings of the National Academy of Sciences, 118 (27) e2025764118; DOI: 10.1073/pnas.2025764118
  Buckner, C. 2019. Deep Learning: A Philosophical Introduction, Philosophy Compass, 14: e12625.
  Floyd, J. et al. Philosophical Explorations of the Legacy of Alan Turing. Springer, 2017.
  Iagar, R. G. 2017. Matemáticas y ajedrez. CSIC.
  Kasparov, G. 2018. Chess, a Drosophila of reasoning. Science 362 (6419), 1087.
  Lenhard, J. 2019. Calculated Surprises: A Philosophy of Computer Simulation. Oxford: Oxford University Press.
  Leoneli, L. 2016. Data-Centric Biology: A Philosophical Study. Chicago: Chicago University Press.
  López de Mántaras Badia, R. & Meseguer González, P. 2017. Inteligencia Artificial. CSIC.
  McCorduck, P. 1991. Máquinas que piensan. Tecnos.
  Rasskin-Gutman, D. 2007. Chess Metaphors: Artificial Intelligence and the Human Mind. Cambridge: The MIT Press.
  Russel, S. & Norvig, P. 2009. Artificial Intelligence: A Modern Approach, Prentice Hall, 3rd edition,

2009.

Vöcking, B. et al. 2011. Algorithms Unplugged. Springer.

Warwick, K. & Shah, H. 2016. Turing's Imitation Game. Cambridge University Press, 2016.

Winsberg, E. 2018. Philosophy and Climate Science. Cambridge: Cambridge University Press.

Yanofsky, N. S. 2013. The outer limits of reason. MIT Press.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

1) Teaching content: The teaching content included in the course syllabus is maintained.

2) Volume of work and temporary planning of teaching: the dedication of the students is maintained in the different programmed activities taking into account the blended nature of the classes in the first semester of the current academic year.

3) Teaching methodology: teaching will be carried out by dividing the groups into subgroups with alternate weeks of attendance by subgroups. So that the teaching will be face-to-face and at the same time at a distance through videoconferences. The tutorials will be done in a non-face-to-face way by telematic means.

4) Evaluation: The evaluation criteria included in the course syllabus are maintained.

5) Bibliography: Bibliographic resources will be increased through the Aula Virtual.