UAB
Universitat Autònoma de Barcelona

Logic

Code: 100314
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500246 Philosophy	OB	2

Contact

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

None.

Objectives and Contextualisation

The main goal of this subject is, first of all, to provide an introduction to the fundamental logical concepts: logical consequence, satisfiability, consistency, and logical equivalence. Second, it aims to provide students with the basic techniques for the logical analysis of deductive reasoning, with special attention to philosophical reasoning. However, the subject can also be taken by people from other degrees. The nature of the subject is fundamentally practical, but it will also reflect on the main problems of Philosophy of Logic. Throughout the course, we will use different tools, such as deductive games (practices) and oral debates, that aim to enhance creativity in philosophical argumentation.

As a final objective, the subject will emphasize the rigor and structure of the philosophical essay, an indispensable element that every philosophy student must master.

Competences

- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.

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- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Using the symbology and procedures of the formal sciences in the analysis and building of arguments.

Learning Outcomes

1. Ability to maintain an appropriate conversation.
2. Autonomously searching, selecting and processing information both from structured sources (databases, bibliographies, specialized magazines) and from across the network.
3. Correctly, accurately and clearly communicating the acquired philosophical knowledge in oral and written form.
4. Effectively communicating and applying the argumentative and textual processes to formal and scientific texts.
5. Explaining the specific notions of the History of Philosophy.
6. Formulating arguments for and against an issue, using proper vocabulary, conceptual precision and argumentative coherence.
7. Producing an individual work that specifies the work plan and timing of activities.
8. Recognising and implementing the following teamwork skills: commitment to teamwork, habit of cooperation, ability to participate in the problem solving processes.
9. Regularising arguments of any source and calculating its logical correctness.
10. Solving problems autonomously.

Content

1. Introduction to formal logic.
2. Propositional logic: First steps towards symbolization. Connectives. Statements.
3. Semantics of propositional logic. Assignments of truth values. Truth tables. Tautologies, contradictions, and contingent formulas.
4. Satisfiability and logical consequence. Logical equivalence.
5. Natural deduction for propositional logic.
6. History and philosophy of logic.
7. Syntax of first-order logic.
8. Semantics of first-order logic. Structures. Truth in a structure.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Deductive games workshop	20	0.8	2, 3, 4, 6, 1, 8, 10
Solve problems in classroom	29	1.16	9, 6
Type: Supervised			
Debate league	24	0.96	2, 3, 4, 6, 1, 8, 10

Type: Autonomous			
Solve problems	30	1.2	9, 10
Study of concepts	25	1	9, 6, 10

Combination of theoretical and practical lectures.

Deductive games.

Participation in a debate league.

Joint resolution of exercises.

Self-learning activities.

Introduction of different levels of difficulty in the practical lessons.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Classroom practices	10%	8	0.32	3, 5, 4, 9, 1, 10
Deductive games workshop work and debate league	40%	12	0.48	2, 7, 4, 6, 1, 8, 10
Synthesis Test	50%	2	0.08	3, 5, 9, 6, 10

There are two assessment modalities, continuous assessment and single assessment.

Continuous assessment. There will be three types of evaluation activities: a synthesis test (on the content of points 1-4 of the syllabus), practices in class, and participation in different activities from which students can choose (deductive games, argumentative debate league, exercises on logical formalisms...) where points 5-8 of the syllabus will be worked on.

The final exam will be worth 50% of the grade, the practical sessions in class 10%, and the evaluation of participation in the other activities 40%. Students who cannot attend all classes of a face-to-face activity will not be evaluated for that activity, and at the end of the course will have to carry out an alternative practice in class on the contents of the corresponding syllabus points. The practices are not recoverable, they must be done and delivered on the same day of class.

To be eligible for the recovery assessment, a minimum grade of 3.5 in the sum of the three parts of the evaluation.

Single assessment. In order to take advantage of the single assessment, it will be necessary to fill out an official application. In a single test, where there will be theoretical and practical questions, the content of the

entire syllabus will be examined. The single assessment will be prepared with the book Forallx (https://forallx.openlogicproject.org), this book includes self-learning material, which can be worked on throughout the course with the help of tutorials with the teaching staff of the subject.

The instructors will inform the students (via Moodle) of the procedure and date for reviewing the grades of all evaluation activities.

In case a student engages in any irregularities that may significantly affect the grade of an assessment activity, that assessment activity will be graded with 0, regardless of any disciplinary proceedings that may follow. If multiple irregularities occur in the assessment activities of the same subject, the final grade for that subject will be 0.

The student will receive a grade of "Not Evaluable" if they have not submitted more than 1/3 of the evaluation activities.

Note: 15 minutes of a class, within the calendar established by the institution/program, will be reserved for students to complete evaluation surveys regarding the faculty's performance and the evaluation of the subject/module.

Bibliography

Mandatory: P. D. Magnus, Forallx, University at Albany, State University of New York, 2023. https://forallx.openlogicproject.org/

Optional:

1. C. Badesa, I. Jané, R. Jansana, *Elementos de lógica formal*, Ariel, 2007.
2. J. Barwise and J. Etchemendy, *The Language of first-order logic*, 3era ed., Center for the Study of Language and Information, cop. 1992.
3. Stanford Enciclopedia of Philosophy: http://plato.stanford.edu/
4. Gateway to Logic. http://logik.phl.univie.ac.at/~chris/gateway/formular-uk.html
5. The Logic Café, http://thelogiccafe.net/PLI/

Extension:

Copi, I. M; Cohen, C; Rodych, V. *Introduction to logic.* Routledge, 2018.

Doxiadis, A. & C. H. Papadimitriou. *Logicomix: una busqueda epica de la verdad.* Madrid: Sinsentido, 2011. Print. (novel·la gráfica)

Ewald, W. "The Emergence of First-Order Logic", *The Stanford Encyclopedia of Philosophy* (Spring 2019 Edition), Edward N. Zalta (ed.), URL = https://plato.stanford.edu/archives/spr2019/entries/logic-firstorder-emergence/.

Lavin, A. *Thinking well. A logic and critical thinking textbook.* Creative commons.

Shapiro, S. & T. Kouri Kissel, "Classical Logic", *The Stanford Encyclopedia of Philosophy* (Winter 2022 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = https://plato.stanford.edu/archives/win2022/entries/logic-classical/.

Sider, T. Logic for philosophy. Oxford University Press, USA. 2010

Thomason, R. "Logic and Artificial Intelligence", *The Stanford Encyclopedia of Philosophy* (Summer 2020 Edition), Edward N. Zalta (ed.), URL = https://plato.stanford.edu/archives/sum2020/entries/logic-ai/.

Software

No specific software is needed

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	11	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	12	Catalan	first semester	morning-mixed
(TE) Theory	1	Catalan	first semester	morning-mixed