UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Philosophy of Science

2627-2-E2403P016

Learning area

Interdisciplinary competences

Learning objectives

Knowledge and understanding

- Develop a critical perspective on scientific research;
- understand the genesis, validation and obsolescence and/or succession of scientific theories and hypotheses;
- understand which conceptions can or cannot be considered scientific based on different criteria;
- provide a qualifying scientific and cultural background.

Applying knowledge and understanding

- Provide depth, direction, and foundations to scientific knowledge;
- foster the capacity for dialogue with other disciplines;
- grasp the connections between different fields of psychological knowledge.

Making Judgements

- Develop skills in critical analysis, evaluation, and synthesis of new and complex ideas through guided textual readings, group discussions, and potential seminar activities.

Communication Skills

- Develop the ability to communicate information, ideas, problems, and solutions clearly and mindfully to both

specialist and non-specialist audiences across various educational and professional contexts;
- Develop solid skills in active listening, negotiation, and teamwork (including interdisciplinary collaboration), as well as the comprehension and critical analysis of different viewpoints.

Learning Skills

- Develop the ability to pursue further studies independently, grounded in greater critical awareness and a specific theoretical-conceptual sensitivity.

Contents

The course aims to provide the foundational knowledge that characterizes the philosophy of science. In light of the historical evolution of theories, it addresses fundamental issues such as: the nature and function of scientific laws and theories; the structure of scientific explanation, prediction, and inferences aimed at acquiring scientific knowledge; the relationship between hypotheses and observational evidence; and the debate surrounding scientific realism.

In the first part of the course, these issues will be addressed in their general scope. In the second part, they will be developed with a specific focus on the multifaceted field of psychological sciences.

Detailed program

General part

- Science and philosophy of science;
- the foundations of scientific reasoning: induction and deduction;
- the philosophical problems of induction and causality;
- the standard view of scientific knowledge and logical positivism (neopositivism);
- Popper and falsificationism;
- the "new" philosophy of science (Kuhn, Lakatos, Feyerabend);
- laws and theories;
- the theory-ladenness of data;
- models of scientific explanation;
- scientific realism and antirealism.

Monografic Part: The mind-body problem

- Historical phases of the problem and foundational theoretical options;
- dualism;
- functionalism;
- mental causation;
- the new cognitive science;
- the problem of consciousness.

Prerequisites

Basic high-school level knowledge of philosophy.

Teaching methods

28 two-hour lectures delivered in person. Teaching methods will include direct lectures, group discussions, the analysis of historically and scientifically significant texts, and potential seminar-based in-depth discussions.

The course is taught in Italian. Lecture attendance is highly recommended.

Part of the teaching materials (slides and selected articles) will be made available on the course e-learning platform to ensure accessibility for non-attending students.

Assessment methods

Learning assessment is conducted exclusively through a written exam consisting of open-ended questions; there are no mid-term exams. The questions are designed to verify the effective acquisition of the epistemological themes and authors covered during the course, while also assessing the student's ability to navigate confidently through the texts in the exam bibliography. Through their written responses, candidates are expected to demonstrate not only a solid knowledge of the theoretical models but also the ability to engage critically with them, structuring a logical and rigorous argument. The final grade, awarded on a 30-point scale, will take into account the depth of content knowledge, the degree of critical independent judgment, and the appropriate and precise use of the discipline's specialized vocabulary.
Erasmus students may contact the professor to arrange a bibliography in English and/or the possibility of taking the exam in English.

The final grade is based on the following assessment criteria:
• 18 - 21 (Pass / Sufficient): Mnemonic or fragmented knowledge of the course contents; limited ability to historical or conceptual contextualization; presentation is correct but basic.
• 22 - 24 (Fair / Satisfactory): Satisfactory knowledge of the subject matter, but predominantly descriptive; initial ability to establish critical connections between different authors or theoretical models; overall appropriate use of language.
• 25 - 27 (Good): Good knowledge and understanding of all the topics in the syllabus; sound capacity for critical analysis and historical-epistemological contextualization; mature and articulate command of the language.
• 28 - 30 (Very Good / Excellent): In-depth and comprehensive knowledge of the exam material; strong argument, synthesis, and personal critical processing skills; rigorous use of specialized and discipline-specific vocabulary.
• 30 with honors / Cum Laude (Outstanding): Outstanding and detailed knowledge of the contents; extraordinary capacity for critical orientation and epistemological discussion; brilliant, fluent, and flawless academic presentation.

Erasmus students may contact the lecturer to arrange for an alternative reading list in English and/or the option to take the exam in English.

Textbooks and Reading Materials

General Section:
Ladyman, J. (2007/2026). *Filosofia della scienza. Un'introduzione*. Roma: Carocci.
Course slides (on the e-learning website)

In-depth readings (optional)
Sinigaglia, C. (a cura di). (2010). *Filosofia della scienza*. Milano: Cortina.
Amoretti, M. C., & Serpico, D. (2022). *Filosofia della scienza: parole chiave*. Roma: Carocci.

Thematic Section:
Di Francesco, M., Marraffa, M., & Tomassetta, A. (2023). *Filosofia della mente. Corpo, coscienza, pensiero*. Roma: Carocci.
Slides and articles presented in class (on the e-learning website)

Sustainable Development Goals

QUALITY EDUCATION