COURSE DESCRIPTION CARD - SYLLABUS

Course name
Philosophy of Science [S1DSwB1>FN]

Course

Field of study
Data Science in Business

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

dr Michał Weres
michal.weres@put.poznan.pl

Lecturers

Prerequisites

Students are expected to have logical thinking skills, the ability to analyze texts, and formulate arguments. A basic understanding of concepts related to science and the scientific method will be beneficial, as well as openness to philosophical reflections on knowledge, truth, and the explanation of reality.

Course objective

The objective of the course is to introduce students to key issues in the philosophy of science, with a particular focus on epistemology. Students will explore various conceptions of scientific knowledge, methods of justifying claims, and the problem of the boundaries of science. The course will cover classical and contemporary debates on scientific realism, the structure of explanations, the role of models and simulations, and the influence of the philosophy of science on modern technologies, including artificial intelligence. The course develops critical thinking skills regarding science and its role in society.

Course-related learning outcomes

Knowledge:
Characterizes key concepts in the philosophy of science, including empiricism, rationalism, falsificationism, and the problem of induction [DSB1_W06].

Describes the relationship between scientific theories and reality, analyzing issues of scientific realism and anti-realism [DSB1_W08].

Skills:
Designs and conducts an analysis of the philosophical foundations of science, examining historical and contemporary approaches to scientific explanations [DSB1_U03].
Analyzes the impact of models and simulations on scientific development and their significance in modern scientific theories [DSB1_U06].
Critically evaluates reductionism, emergentism, and postmodernist critiques of science in the context of contemporary research [DSB1_U07].
Argues positions on the objectivity of science, demarcation, and the role of science in society [DSB1_U11].
Collaborates in interdisciplinary teams, analyzing the influence of the philosophy of science on the development of new technologies and artificial intelligence [DSB1_U14].

Social competences:
Critically analyzes their own knowledge and views in the context of the philosophical foundations of science and their consequences for contemporary research [DSB1_K01].
Takes responsibility for analyzing the ethical and social aspects of science and its impact on shaping reality [DSB1_K05].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Throughout the course, a student can earn a total of 100 points. There are two formative assessments. The first is a case study, completed in written form midway through the course, worth 50 points. The second is a written exam at the end of the course, also worth 50 points. The passing threshold is a total of 50 points from both assessments.

Programme content

The course focuses on key epistemological issues related to science. Students will explore the nature of scientific knowledge, the relationship between empiricism and rationalism, and the problem of induction and falsificationism. Topics will include scientific realism and anti-realism, the structure of scientific explanations, and the role of models and simulations. The course will also address questions of objectivity, reductionism, postmodern critiques of science, and contemporary challenges such as the epistemology of AI.

Course topics

What Is the Philosophy of Science?
History of the Philosophy of Science
The Boundaries of Science and the Demarcation Problem
The Nature of Scientific Knowledge
Empiricism and Rationalism in Science
The Problem of Induction and Falsificationism
Scientific Theories and Reality
Paradigms and Scientific Revolutions
The Structure of Scientific Explanations
Reductionism and Emergentism
Objectivity in Science
Science and Truth
The Role of Models and Simulations in Science
Postmodernism and the Critique of Science
Philosophy of Science and Artificial Intelligence

Teaching methods

Problem-based lecture, moderated discussions, case study analysis

Bibliography

Basic:
Heller, M. (2019). Filozofia nauki. Copernicus Center Press
Życiński, J. (2015). Elementy filozofii nauki. Copernicus Center Press

Additional:
Nowak, M. (2019). Status epistemologiczny aksjomatów, tez i hipotez w teoriach naukowych. Przedsiębiorczość i Zarządzanie, 20(12.2), 9-18.
Nowak, M. (2020). Nomothetic and idiographic approach in management sciences. Humanities and Social Sciences, 27(1), 50-56.

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50