

## COURSE OUTLINE: PHILOSOPHY OF SCIENCE

### (1) GENERAL

<b>UNIVERSITY / Department</b>	• NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS / Department of History and Philosophy of Science		
<b>STUDY LEVEL</b>	Postgraduate		
<b>COURSE CODE</b>		<b>SEMESTER OF STUDY</b>	1 <sup>st</sup>
<b>COURSE TITLE</b>	Philosophy of Science		
<b>INSTRUCTOR(S)</b>	C. Mantzavinos, <a href="http://www.mantzavinos.org">www.mantzavinos.org</a>		
<b>TEACHING ACTIVITIES</b>	<b>TEACHING HOURS PER WEEK</b>	<b>ECTS</b>	
Seminars	3	10	
<b>COURSE TYPE</b>	Introductory		
<b>PREREQUISITE COURSES</b>	–		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS</b>	English		
<b>COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.uoa.gr/courses/PHS587/">https://eclass.uoa.gr/courses/PHS587/</a> Password: PhilScie		

### (2) LEARNING OUTCOMES

Learning Outcomes
<p>What do we mean, when we say that we can <i>explain</i> a phenomenon? What are <i>good</i> explanations? What is the connection between theory and evidence? Is the aim to <i>explain</i> the social world after a manner worked out for the natural world or to <i>understand</i> the social world from within? How should one understand the proposition that an increase in price <i>causes</i> a decrease in the demanded quantity of a good? Or to put it more provocatively: what differentiates a scientific theory from a fairy tale? Does our knowledge advance over time and if yes, how? What is the relation between theory and praxis? The course will provide answers to all these questions.</p> <p>The objective of the course is to teach students to reflect philosophically about the fundamental methodological problems of science. The course will focus on the philosophical problems that emerge when scientists engage in epistemic activities. Since there are seminars dealing with the problems of the specific sciences, the course will provide an introduction into the <i>general philosophy of science</i>. The first part will deal with the traditional conceptions of philosophy science by discussing material from the works of Popper, Albert, Kuhn, Lakatos, Feyerabend and Kitcher. The second part will deal with the following topics: causation; explanation; scientific realism; science and values.</p>

<b>General Skills</b>
<ul style="list-style-type: none"> <li>• Work in an international environment</li> <li>• Work in an interdisciplinary environment</li> <li>• Generating new research ideas</li> <li>• Exercise of critical reflection</li> </ul>

### (3) COURSE CONTENT

Week	Topic
1	Introduction
2	Karl Popper: Critical Rationalism I
3	Hans Albert: Critical Rationalism II
4	Thomas Kuhn: The Structure of Scientific Revolutions
5	Imre Lakatos: The Methodology of Scientific Research Programmes
6	Paul Feyerabend: Anarchistic Philosophy of Science
7	Philip Kitcher: The Advancement of Science
8	Causality
9	Scientific Explanation I
10	Scientific Explanation II
11	Scientific Realism
12	Science and Values I
13	Science and Values II

<p><b>Week 1: Introduction</b></p>
<p><b>Week 2: Karl Popper: Critical Rationalism I</b></p> <p><b>Pre-reading:</b> Karl Popper: <i>The Logic of Scientific Discovery</i>, London and New York: Routledge, (1934) 1959/2002</p> <p><b>Ch. 1: A Survey of Some Fundamental Problems</b></p> <p><b>Ch. 2: On the Problem of a Theory of Scientific Method</b></p> <p><b>Ch. 3: Theories</b></p> <p><b>Ch. 4: Falsifiability</b></p>
<p><b>Week 3: Hans Albert: Critical Rationalism II</b></p> <p><b>Pre-readings:</b> Hans Albert: <i>A Treatise on Critical Reason</i>, Princeton: Princeton University Press, (1968/1985)</p> <p><b>Introduction: Rationality and Commitment</b></p> <p><b>Ch. 1: The Problem of Foundation</b></p> <p><b>Ch. 2: The Idea of Criticism</b></p>

**Week 4: Thomas Kuhn: The Structure of Scientific Revolutions**

**Pre-reading:** Thomas Kuhn: *The Structure of Scientific Revolutions*, Second Edition, Enlarged, Chicago: The University of Chicago Press, 1970

**Introduction:** A Role for History

**Chapter V:** The Priority of Paradigms

**Chapter IX:** The Nature and Necessity of Scientific Revolutions

**Week 5: Imre Lakatos: The Methodology of Scientific Research Programmes**

**Pre-reading:** Imre Lakatos: "Falsification and the Methodology of Scientific Research Programmes", in: *Criticism and the Growth of Knowledge*, (eds.) Imre Lakatos and Alan Musgrave, Cambridge: Cambridge University Press, 1970, pp. 91-196.

**Week 6: Paul Feyerabend: Anarchistic Philosophy of Science**

**Pre-reading:** Paul Feyerabend: *Against Method*, 4th edition, London and New York: Verso, (1975) 2010, Chs.: Introduction, 1, 17, 18 and 19.

**Introduction**

**Chapter 1:** [...] Anything goes.

**Chapter 17:** Neither science nor rationality are universal measures of excellence. [...]

**Chapter 18:** Yet it is impossible to evaluate standards of rationality and to improve them. [...]

**Chapter 19:** Science is neither a single tradition, nor the best tradition there is, except for people who have been accustomed to its presence, its benefits and its disadvantages. [...]

**Week 7: Philip Kitcher: The Advancement of Science**

**Pre-readings:** Philip Kitcher: *The Advancement of Science. Science without Legend, Objectivity without Illusions*, Oxford: Oxford University Press, 1993.

**Chapter 1:** Legend's Legacy

**Chapter 3:** The Microstructure of Scientific Change

**Week 8: Causality**

**Pre-reading:** Bertrand, Russell: "On the Notion of Cause", in *Proceedings of the Aristotelian Society*, vol. 7, 1912, pp. 1-26 and reprinted in *Mysticism and Logic*, Routledge: London and New York, 1994, pp. 173-199.

**Christopher Hitchcock:** "Of Humean Bondage" in *British Journal for the Philosophy of Science*, vol. 54, 2003, pp. 1-25.

**Week 9: Scientific Explanation I**

**Pre-reading:** C. Mantzavinos: *Explanatory Pluralism*, Cambridge: Cambridge University Press, 2016.

**Chapter 1:** Introduction

**Chapter 2:** The Wrong Question: What is an Explanation?

**Chapter 3:** A Brief Outlook on the Social Sciences

**Chapter 4: Towards Explanatory Pluralism**  
**Chapter 5: The Explanatory Enterprise**  
**Chapter 6: The Rules of the Explanatory Game**

**Week 10: Scientific Explanation II**

**Pre-reading: C. Mantzavinos: *Explanatory Pluralism*, Cambridge: Cambridge University Press, 2016.**

**Chapter 7: The Plurality of Explanatory Games**  
**Chapter 8: Explanatory Activity as Problem-Solving Activity**  
**Chapter 9: Explanatory Rules as Shared Rules**  
**Chapter 10: Normative Appraisal: A Procedural Conception**  
**Chapter 11: Explanatory Methodology as Technology**  
**Chapter 12: Epilogue**

**Week 11: Scientific Realism**

**Pre-reading: Stathis Psillos: *Scientific Realism. How Science Tracks Truth*, London: Routledge, 1999.**

**Introduction**  
**Chapter 1: Empiricism and Theoretical Discourse**  
**Chapter 2: Theories as Instruments?**  
**Chapter 3: Carnap's Neutralism**  
**Chapter 4: In Defense of Scientific Realism**

**Week 12: Science and Values I**

**Pre-reading: C. Mantzavinos: *The Constitution of Science*, typescript  
Chapters 1,2,3,4, and 5.**

**Week 13: Science and Values II**

**Pre-reading: C. Mantzavinos: *The Constitution of Science*, typescript  
Chapters 6,7,8,9, and 10.**

#### (4) TEACHING AND LEARNING METHODS – ASSESSMENT

<b>TEACHING FORMAT</b>	Face to face, in classroom.	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Learning process support through the e-class online platform.	
<b>TEACHING STRUCTURE</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures, Seminars	39
	Presentation preparation	21
	Independent study	120
	Project (paper preparation and submission)	120
	<b>Total</b> (30 hours of work per credit unit)	<b>300</b>
<b>STUDENT EVALUATION</b>	<p>1. Presentation (30%) 2. Final essay (70%)</p> <p>Students will be assessed through a 4,000-5,000 words essay (70%, the word limit includes footnotes and bibliography) and a presentation (30%). Citation: All assessed essays should include a complete bibliographical list of primary and secondary sources. The essay itself should be fully referenced. Essay submission at the end of the semester by email to the instructor. The essay deadline will be uploaded on e-class.</p>	

#### (5) RECOMMENDED BIBLIOGRAPHY

<p><b>Textbooks</b></p> <ol style="list-style-type: none"> <li>1. Alan Chalmers: <i>What is this Thing Called Science?</i>, 4<sup>th</sup> edition, Open University Press, 2013.</li> <li>2. Peter Godfrey-Smith: <i>Theory and Reality. An Introduction to Philosophy of Science</i>, 2<sup>nd</sup> edition, Chicago: University of Chicago Press, 2021.</li> <li>3. Gillian Barker and Philip Kitcher: <i>Philosophy of Science: A New Introduction</i>, Oxford University Press, 2013</li> </ol> <p><b>IT IS MANDATORY THAT EVERY STUDENT WILL HAVE READ ONE TEXTBOOK BEFORE THE BEGINNING OF THE COURSE!</b></p>
---