Dados da Disciplina

Departamento: SECRETARIA APOIO ADMINISTRATIVO - PRPGP
Código: PRP800 **Carga Horária Total:** 30 **Créditos:** 2
Nome: INTRODUCTION TO THE PHILOSOPHY OF SCIENCE

Objetivos

At the end of this course, students will have gained the following knowledge and skills:
• Students will have a basic understanding of what science is, how it can be distinguished from other ways of knowing and how scientific explanation works. They will be able to explain why scientific theories change over time. They will be able to sketch the development of science from pre-17th century natural philosophy to the empirical, specialized disciplines of today. They will realize that science is not an isolated endeavor, but that it is situated within a broader social and cultural context.
• Students will understand key notions in philosophy of science, such as paradigm, falsification, realism, the Quine-Duhem thesis and the hypothetico-deductive model. Importantly, they will be able to apply these concepts successfully to examples from scientific practices they have not encountered earlier.
• Students must be knowledgeable of the major authors in the philosophy of science and their contributions to the field (e.g., Bacon, Popper, Hempel). They should be able to situate them within the history of philosophy. However, they need not know any biographical details about these authors.
• The readings will be discussed during the classes. Students should be able to critically reflect on the reading materials and give evidence of this in class (e.g., classroom exercises, in-group discussion).
• Students will be able to think critically about various questions in the philosophy of science, as reflected in their assigned paper, classroom exercises, midterm and final exam.

Ementa

This course provides an introduction to the main philosophical questions concerning scientific knowledge and methodology. It surveys a variety of positions on standard philosophy of science topics, centered around four basic themes. First, we explore to what extent science resembles or differs from other ways of knowing. What is specific to the scientific method? How can one characterize scientific explanation? We examine the dual roots of science in natural philosophy and in instrumental approaches. Second, we focus on philosophical accounts of scientific theory-change, including falsificationism and paradigm changes. Third, we look at the scientific realism debate: can fundamental philosophical questions on the structure of reality be answered by the sciences? What can philosophical reflection on the history of science tell us about the reliability of scientific methodology? Fourth, we examine theoretical and empirical investigations of scientific practice, delving into topics like creativity, the role of values in scientific practice, feminist perspectives on scientific practice. Besides an introduction of established theories and key concepts in the philosophy of science, this course also explores some relatively new directions, such as the mechanisms that underlie scientific creativity and the ethical responsibilities of scientists.

Conteúdo Programático

Classes, evaluation and attendance:

· 10%: In-class participation: Attendance will be taken at the start of each class.
· 10%: Classroom exercises: Two short classroom exercises, where acquired knowledge is applied to a concrete case study (about 500 words maximum).
· 20%: Short paper (1500-2000 words): Choice from a range of topics that will be announced in class.
· 30%: Midterm test: This is a short test which will assess the extent to which students know key concepts in the philosophy of science (maximum 4-5 sentences per answer).
· 30% Final exam: In this exam, students will be asked a detailed question (applying knowledge of philosophy of science to a concrete situation) and a few short questions.

Content/program

Unit I - What is science I: The dual roots of science
Unit II - What is science II: Demarcation, naturalism, science and pseudoscience
Unit III - What is science III: Induction
Unit IV - Scientific explanation I: The hypothetic-deductive method
Unit V - Scientific explanation II: Detecting causes of and inferences to the best explanation
Unit VI - Scientific explanation III: Unification, reductionism and pluralism
Unit VII - Scientific theory change I: Falsification
Unit VIII - Scientific theory change II: Scientific revolutions
Unit IX - Scientific realism I: The case for scientific realism
Unit X - Scientific realism II: Constructive empiricism and the pessimistic meta-induction
Unit XI - Philosophy of scientific practice I: Scientific understanding
Unit XII - Philosophy of scientific practice II: Scientific discovery and creativity
Unit XIII - Philosophy of specific sciences
Unit XIV - Values and norms in science: Are scientists morally responsible?
Unit XV - Values and norms in science: Science and religion

Unit XVI - Values and norms in science: Feminist philosophy of science

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Bibliography

Ladyman, James (2002). *Understanding Philosophy of Science*. London: Routledge.
Selected papers from McGrew, Tim, Alspector-Kelly, Marc, & Allhoff, Fritz (2009). *Philoso- phy of science. An historical anthology*. Chichester: Wiley-Blackwell. (will be provided in pdf)
Other required reading will be provided in pdf:
Week 1 Dear, Peter (2006). *The intelligibility of nature. How science makes sense of the world*, Introduction. Chicago: University of Chicago Press.
Week 2 Forrest, Barbara (2000). Methodological naturalism and philosophical naturalism: Clarifying the connection. *Philo*, 3, 7-29.
Introduction to Philosophy of Science 4
Week 3 Ladyman, chapter 2
Week 3 McGrew et al., Hume (section 3.7)
Week 4 Ladyman, chapter 7
Week 5 Glennan, Stuart. (2002). Rethinking mechanistic explanation. *Philosophy of sci- ence*, 69, S342-S353.
Week 6 Cartwright, Nancy. (1997). Where do laws of nature come from? *dialectica*, 51, 65- 78.
Week 7 Ladyman, chapter 3
Week 7 McGrew et al., Popper (section 7.1.)
Week 8 Ladyman, chapter 4
Week 8 McGrew et al, Kuhn (section 7.2.)
Week 9 Ladyman (2002), chapter 5
Week 10 Laudan, Larry (1981). A confutation of convergent realism. *Philosophy of science*, 48, 19-49.
Week 11 De Regt, Henk & Dieks, Dennis (2005). A contextual approach to scientific under- standing. *Synthese*, 144, 137-170.
Week 12 Dunbar, Kevin, & Fugelsang, Jonathan (2005). Scientific thinking and reasoning. In
K.J. Holyoak & R. Morrison (Eds.), *Cambridge handbook of thinking and reasoning* (pp. 705- 726). New York: Cambridge University Press.
Week 12 De Cruz, Helen & De Smedt, Johan (2013). The value of epistemic disagreement in scientific practice. The case of *Homo floresiensis*. *Studies in History and Philosophy of Science A*, 44, 169-177.
Week 13 Takacs, Peter & Ruse, Michael (2013). The current status of the philosophy of biology. *Science & Education*, 22, 5-48.
Week 14 Douglas, Heather (2003). The moral responsibilities of scientists (tensions be- tween autonomy and responsibility). *American Philosophical Quarterly*, 40, 59-68.
Week 15 Jaeger, Lydia (2012). Against physicalism-plus-God: How creation accounts for divine action in nature's world. *Faith and Philosophy*, 29, 295-312.
Week 16 Fricker, Miranda (2007). *Epistemic Injustice: Power and the Ethics of Knowing*, chapter 1. Oxford: Oxford University Press.
Week 16 Longino, Helen (1991). Multiplying subjects and the diffusion of power. *Journal of Philosophy*, 88, 666-674.
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