General Description

This course investigates the epistemological, methodological and ontological dimensions of science. Students will study the relation between perception, evidence and theory in the context of scientific research. They will explore different inferential accounts of this relation, paying particular attention to how evidence is used, and how it ought to be used, to confirm or disconfirm theories. Lessons from the history of science will provide checks and balances to these accounts as well as to accounts of the exact limits of scientific knowledge. Finally, students will reflect on some related topics in the metaphysics of science such as what are laws of nature and what constitutes a good scientific explanation.

Each and every lecture consists of a main topic and a supplementary, or as it is called below ‘special’, topic. The latter bridges the main topic to discussions in other areas of philosophy or different fields altogether. The supplementary topic is meant to help place the main topic in a broader context, thereby strengthening the student’s understanding and appreciation of the discussion at hand.

Please note that due to copyright restrictions I cannot upload all the required readings on Moodle, though you will find that there is still a fair amount.

Disclaimer: The compulsory readings can be changed at any time in order to respond to the needs of course participants. It is important that students check for updates on Moodle every week.

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Main Reading Sources:

Recommended Reading Sources:

Brief Surveys:

HT Week 1: THEORY AND OBSERVATION
Key questions: What is the relation between observation and theory? Is the distinction between observables and unobservables warranted? How pervasive is the theory-ladenness of observation?

**Essential Reading:**

**Further Reading:**

**Special Topic (+Reading): Theory-Ladenness**

**HT Week 2: INDUCTION AND ITS PROBLEMS**

Key questions: How is induction different from deduction? Can we provide a general justification for induction? How are hypotheses about grue objects different from hypotheses about green/blue objects?

**Essential Reading:**

**Further Reading:**

**Special Topic (+Reading): The New Riddle of Induction**


**HT Week 3: THEORIES OF CONFIRMATION: HYPOTHETICO-DEDUCTIVISM**

**Key questions:** Is hypothetico-deductivism too simplistic an account of confirmation? What are the determining features of ad hoc hypotheses? How, if at all, can we respond to confirmation paradoxes like the Raven paradox?

**Essential Reading:**


**Further Reading:**


**Special Topic (+Reading): Ad Hoc-ness**


**HT Week 4: THEORIES OF CONFIRMATION: BAYESIANISM**

**Key questions:** What is the difference between objective and subjective Bayesians? How are we meant to interpret the probability calculus? What is the problem of old evidence?

**Essential Reading:**


**Further Reading:**


**Special Topic (+Reading): Novel Predictions**


**HT Week 5: SCIENTIFIC REVOLUTIONS**

**Key questions:** Does anything survive scientific revolutions? If so, what is its significance for the realism debate?

**Essential Reading:**


**Further Reading:**


**Special Topic (+Reading): Case Studies**

HT Week 6: THE SCIENTIFIC REALISM DEBATE

Key questions: What challenge does constructive empiricism pose for realism? Are there always empirically equivalent rivals to any given theory? What is the no miracles argument? What is the pessimistic meta-induction argument?

Essential Reading:

Further Reading:

Special Topic (+Reading): Underdetermination

HT Week 7: READING WEEK

HT Week 8: THEORIES OF EXPLANATION

Key questions: Must explanation involve deduction? What are the problems faced by the inductive-statistical account of explanation? Is the neo-classical account of reduction viable? If entailment is too strong as a logical relation between reduced and reducing fields or theories, what logical relation, if any, is adequate? Can we still speak of reduction when the meaning of the notions involved diverges?

Essential Reading:

Further Reading:

Special Topic (+Reading): Inference to the Best Explanation

HT Week 9: CAUSATION

Key questions: What is causation? How, if at all, does it differ from (mere) correlation? Can we speak of probabilistic causation? Can manipulability accounts of causation be given in non-circular terms? Is causation a unified category? How does causation relate to explanation? Is it legitimate to count omissions as causes?

Essential Reading:

Further Reading:

Special Topic (+Reading): Unifying Power

HT Week 10: LAWS OF NATURE
Key questions: What is a law of nature? How, if at all, does it differ from accidental generalisations? Do laws of nature tell us how things must behave? What is a ceteris paribus law? Are there really any such laws?

**Essential Reading:**

**Further Reading:**

**Special Topic (+Reading): Ceteris Paribus Clauses**

**HT Week 11: NATURAL KINDS**

Key questions: What are natural kinds? How are they different from non-natural kinds? Does nature really have joints? If so, can these joints be found in some domains (e.g. physics and chemistry) but not others (biology and psychology)?

**Essential Reading:**

**Further Reading:**
Special Topic (+Reading): Dispositions

HT Week 12: COLLECTIONS

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