Methodology: induction, reason and science [PY 3035]

Note: this course was formerly called 'Methodology'. Its new title makes clearer what the course involves, but there has been no change in the syllabus.

Introductory reading

O'Hear, Anthony. An Introduction to the Philosophy of Science. (Oxford: Oxford University Press, 1989).

Skyrms, B. Choice and Chance. Second Edition. (Belmont, CA: Wadsworth, 1986).

Sample examination questions

1.   'Inductive methods will lead to truth, if any method will.' Does this provide a basis for the justification of induction?

2.   'Hume did not merely pose the problem of induction, he solved it.' Discuss.

3.   Is it more rational to believe that all emeralds are green than that all emeralds are grue? Give reasons for your answer.

4.   Do we have evidence for the hypothesis that all emeralds are grue?

5.   What is Hempel's 'Paradox of the Ravens'? How, if at all, can it be solved?

6.   What is it to explain why something happened?

7.   What is the 'deductive nomological' model of explanation? Does it apply to all good scientific explanations, to some, or to none?

8.   Everything that happens, happens. Everything that does not happen, does not happen. Does this show that no sense can be made of the notion of the objective probability of something happening?

9.   'Probability theory determines the rational way to change one's degree of confidence in a hypothesis in the light of new data.' Discuss.

10.   How can we best explain the meaning of counterfactual conditionals?

11.   Do Laws of Nature have exceptions?

12.   Is 'nomic necessity' a species of necessity?

13.   What distinguishes natural laws from accidental generalisations?

14.   'The existence of experimental error shows that no hypothesis is observationally refutable.' Discuss.

15.   What is the relation of observation to theory?

16.   What does it mean for a theory (or theory shift) to be ad hoc? What, if anything, justifies the view that ad hoc theories are scientifically unacceptable?

17.   Is there any reason to suppose that the conclusion of an inference to the best explanation is likely to be true?