

V7APSC Philosophy of Science



**Spring Semester
2009-10**

1: MODULE INFORMATION	3
1.1 AIMS.....	3
1.2 DEPARTMENTAL TAUGHT COURSE LEARNING OUTCOMES	3
1.3 STRUCTURE OF TEACHING	4
1.4 WEBCT	4
2. ASSESSMENT	5
2.1 ASSESSMENT SUMMARY.....	5
2.2 FORMAL EXAM.....	5
2.3 ESSAY DEADLINES	5
2.4 PLAGIARISM	6
2.5 WRITING ESSAYS	6
3. STUDENT FEEDBACK	10
4: MODULE CONTENT	10
4.1 LECTURE SCHEDULE.....	10
4.2 SEMINAR ARRANGEMENTS: NEXUS.....	10
4.3 READING LIST	10

1: MODULE INFORMATION

Level	A
Pre-Requisites	None
Semester	2
Module Convenor	Carrie Jenkins, C6 Trent Building
Office Hours	Tuesdays 10-12
Phone	(0115 95) 15861
Lecture Location	Pope C19
Lecture	Tuesdays 4-5
First Lecture	Week 1: Tuesday 26 th January
Email	carrie.jenkins@nottingham.ac.uk

1.1 Aims

The aim of this module is to introduce students to the philosophy of science. Typical scientific enterprises for the purposes of this module include physics, chemistry and biology. We shall look at a range of epistemological and metaphysical questions raised by the pursuit of such enterprises.

1.2 Departmental Taught Course Learning Outcomes

Knowledge and understanding

- A1. Knowledge of the theories and arguments of some of the major philosophers, encountered in their own writings, and some awareness of important areas of interpretative controversy concerning the major philosophers.
- A2. Alertness to opportunities for employing historical doctrines to illuminate contemporary debates.
- A3. A clear grasp of some central theories and arguments in the fields of Logic, Metaphysics, Epistemology, or Philosophy of Mind, broadly understood.
- A4. A clear grasp of some central theories and arguments in the fields of Moral, Political or Social Philosophy, broadly understood.
- A5. An awareness of some major issues currently at the frontiers of philosophical debate and research.
- A6. Appreciation of the wide range of application of techniques of philosophical reasoning.

Intellectual skills

- B1. Ability to identify the underlying issues in different kinds of debate.
- B2. Ability to analyse the structure of complex and controversial problems, with an understanding of major strategies of reasoning designed to resolve such problems.
- B3. Ability to read carefully and interpret texts drawn from a variety of ages and/or traditions with a sensitivity to context.
- B4. Ability to abstract, analyse and construct logical argument, employing the techniques of formal and informal methods of reasoning as appropriate, together with an ability to recognise any relevant fallacies.
- B5. Ability to employ detailed argument to support or criticise generalisations in the light of specific implications.
- B6. Ability to recognise the strengths and weaknesses of arguments on both sides of a philosophical question.

Professional/practical skills

- C1. Ability to identify textually-based arguments and subject their structure and implications to rigorous assessment.
- C2. Ability to understand specialised philosophical terminology and use it properly.
- C3. Ability to judge the success of standard arguments.
- C4. Ability to identify common persuasive stratagems that cannot withstand philosophical scrutiny and demonstrate how they weaken the arguments that employ them.
- C5. Readiness to engage with the concerns of ordinary life, examining characteristic problems of practical reason (e.g. the subjects of ethical and political debate) whilst being sensitive to a variety of opinions, practices and ways of life.
- C6. Readiness to review unfamiliar ideas with an open mind and a willingness to change one's mind when appropriate.

Transferable/key skills

- D1. Ability to communicate clearly.
- D2. Ability to listen attentively to complex presentations, use libraries effectively and read carefully a variety of technical and non-technical material.
- D3. Ability to make effective use of Information Technology.
- D4. Ability to motivate oneself, work autonomously, and manage one's own work to time limits.
- D5. Ability to marshal a complex body of information, construct cogent arguments in the evaluation of this material, and present a clear and well-structured assessment of relevant considerations, in both oral and written form.
- D6. Ability to think creatively, self-critically and independently.

1.3 Structure of teaching

There will be ten one-hour lectures. The lectures are intended to provide a general framework which will help you to understand the course topics and the set reading. Remember that part of the aim of a philosophical education is to get **you** to question what people tell you. You therefore should not accept what is said in the lectures uncritically.

There will also be a series of fortnightly seminars, for which you will split into groups of about twenty. The purpose of the seminars is to enable you to discuss the issues that arise from the lectures and the readings; you should come to them **having done any preparation** required by your seminar leader. It is important to participate in the discussion, which is intended to help you to develop skills of reasoning and expression, as well as to deepen your understanding of the arguments presented in the readings and lectures. **Details of how to sign up for seminars can be found below (Section 4.2).**

1.4 WebCT

I will be putting all my slides, this module guide, and other important information online through WebCT. You can access WebCT via your portal. If you have problems with this let me know.

2. ASSESSMENT

2.1 Assessment Summary

This module carries 10 credits. You get these in the following way.

By completing **one essay of at most 1500 words** (length non-negotiable) to a satisfactory standard and passing **a one-hour exam**. The essay is worth 30% of the overall mark and the exam is worth 70%.

2.2 Essay Questions

NB: Although I have given you some relevant reading (see 4.3 Reading List, below), I do expect you to do your own research, and of course your own thinking, as well.

- (1) What is Humean scepticism about induction? Should we endorse it?
- (2) Explain how Popper tried to solve the demarcation problem, and describe two objections to his view. Can these objections be answered?
- (3) We've observed as many grue emeralds as green emeralds. What (if anything) can we predict about future emeralds, given these observations?
- (4) 'Theoretical knowledge in the sciences cannot be founded on observation, for there is no such thing as observation untainted by scientific theory.' Do you agree?

Remember that a **1500 word essay is quite short!** Plan the structure of your essay and do not exceed the word limit. Remember to answer the exact question set.

2.2 Formal Exam

The exam lasts one hour. There will be four questions on the paper and you will be required to answer one. The questions will concern the topics **not** covered by the essay, namely:

Realism and Instrumentalism
Explanation
Laws of Nature
Causation

Further advice about the exam will be given in lectures.

2.3 Essay Deadlines

These deadlines apply to all students taking philosophy modules, including subsidiary students. Count up how many philosophy essays you must submit in the semester, find that figure in the left-hand column in the table below. The numbers in that row tell you how many essays to submit for each of the three deadlines. It is entirely up to you to choose which essays to write for which deadline.

How many philosophy essays must you submit in total?	Number of essays to submit on the first deadline.	Number of essays to submit on the second deadline.	Number of essays to submit on the third deadline.
1	0	1	0
2	1	0	1
3	1	1	1
4	1	1	2
5	1	2	2
6	2	2	2
7	2	2	3
8	2	3	3

The deadline dates referred to in the table are as follows:

1st deadline: Monday 16th March 2009

2nd deadline: Tuesday 21st April 2009

3rd deadline: Tuesday 5th May 2009

Essays must be submitted ELECTRONICALLY AND AS A HARD COPY at the very latest, by the end of the working day (5.00 PM) of the deadline date (for instructions on how to submit essays, see below). These deadlines specify the latest times you must get your essay(s) in to avoid penalty. You could, of course, submit them in advance of the deadline.

If your work is late (this includes electronic submission) a penalty of 5 marks per day is deducted from its mark. This is a University policy. If you are in difficulty, extensions to deadlines are granted in exceptional circumstances. See your Philosophy Handbook for more details of these points.

If you do not understand the system, please see either your personal tutor or the module convenor. The main thing to remember is that if you want an extension and you have a *philosophy* personal tutor, then you must approach them. If you don't have a *philosophy* personal tutor then you must approach the module convenor about an extension.

2.4 Plagiarism

The Philosophy Handbooks contain detailed information on what counts as plagiarism. You should make sure that you read this. Plagiarism is regarded as the most serious academic offence.

2.5 Writing essays

Essays are marked on the quality of their presentation, relevance, argument, knowledge of the literature and other such philosophical merits (see your Philosophy Handbook for the full marking criteria). They are not marked according to whether they agree with the opinions of the lecturer. You must keep a copy of your essay. Comments on the essay will be written on the cover sheet

that you hand in with the essay. Your seminar leader will be able to discuss your essay with you in feedback sessions if there is anything you do not understand.

NB. ESSAYS MUST BE SUBMITTED BOTH ELECTRONICALLY AND AS A HARD COPY

Hard Copy Submission

You should post the hard copy of your essay through the letterbox in the window to C4. When submitting an essay you must also complete a **coursework coversheet** and attach it to your work. A receipt will be returned to the module pigeonhole within a few days.

Electronic Submission

You must submit an electronic copy of your essay. We suggest that as you print your essay for hard copy submission you also electronically submit it. Here is how you do this:

ELECTRONIC SUBMISSION OF ESSAYS

If this is your first time uploading an essay to www.submit.ac.uk please follow the instructions immediately below. If you have used the site before, please use the instructions overleaf to add more modules to your existing profile.

1. Enrol at:
http://www.submit.ac.uk/newuser_type.asp

2. Your class ID is **56015**

3. Your class password is **V7APSC**

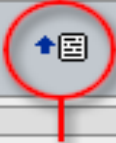
4. Follow the on screen instructions to create your profile

YOU ARE NOW READY TO SUBMIT YOUR ESSAY

5. Log in at:
<http://www.submit.ac.uk>

6. Click the class you want to submit your essay for.

7. Click the submit button:

#	assignment	submit
1	assignment 1	
	07-17-03 07-10-03	

click to submit

8. Browse for your essay - then click submit.

9. You will see a preview of your essay. You must then click 'yes submit' to complete the submission:

Is this the paper you want to submit? [yes, submit](#) [no, go back](#)

10. Print off the receipt of your submission. **YOU MUST KEEP A RECORD OF THIS RECEIPT!**

END

ADDING MORE CLASSES TO YOUR EXISTING 'TURN IT IN' ACCOUNT

Once you have enrolled for one class on www.submit.ac.uk you have a profile on the site. To add more classes to your profile simply log in at the above address, your screen will look like this:

my classes user info messages

Welcome, Joe Bloggs

Now viewing: All classes
This is your student homepage. The homepage shows your enrolled classes. To enroll in a new class, click the enroll in a class button. Click a class name to open your portfolio for the class. From your portfolio, you can submit a paper.

enroll in a class

University of Nottingham

class ID	enter a class	instructor	status	drop class
42583	Moral Philosophy	Fisher, A.	active	

1. Click 'enrol in a class'
2. Enter the class ID and enrolment password for the new module you want to enrol on
3. You will now see this module added to your list of classes and you can submit coursework for it
4. Repeat this process to add all your modules
5. To upload an essay to a new class follow the instructions on the previous page from step 6.

3. STUDENT FEEDBACK

We value your opinion on our teaching, and seek to improve our courses and modules all the time. We can do this only if we hear your reactions to what we teach and how we teach it. At the end of the course your opinions about it will be sought. You will be asked to complete a short evaluation questionnaire. Your comments are most appreciated as they allow us to see how the module can be improved for future years.

Of course, you don't have to wait until the end of the course if there is something we should know. Please contact the module convenor at any time if you have suggestions or comments about the course. Please also let the convenor know, at any time, of any way in which your studies for this course could be facilitated.

4: MODULE CONTENT

4.1 Lecture Schedule

Lectures are at 4-5 on Tuesdays in Pope C19. The following lecture guide is a rough outline; some variation is possible. Note that **the first lecture is on 26th January**.

Lecture 1:	Introduction and Hume's Problem
Lecture 2:	Falsificationism
Lecture 3:	Goodman's Problem
Lecture 4:	Theory and Observation
Lecture 5:	Realism and Instrumentalism I
Lecture 6:	Realism and Instrumentalism II
Lecture 7:	Explanation
Lecture 8:	Laws of Nature
Lecture 9:	Causation
Lecture 10:	Exam Information/Revision/Catch-Up

4.2 Seminar Arrangements: Nexus

Nexus is the system used in Philosophy for seminar registration. **As soon as possible, you need to log on to Nexus in order to register for a seminar group.** Your default username is your University username and your default password is your seven digit student ID (found on your student card). In Nexus you will be able to select Philosophy of Science (V7APSC), view all available seminar groups and register for one group. Groups are normally restricted to twenty places each.

N.B. Once you are logged on to Nexus it is possible for you to view the seminar groups for ALL Philosophy modules, not just the modules for which you are registered. Please make sure that you **only sign up for seminar groups on the modules that you are registered for**. I also suggest that you change your password as soon as possible.

4.3 Reading List

It is not necessary to read everything on this list, but you should read something on each topic. Many of the topics interact with each other, so it is not enough to read only the items listed under the topics you plan to write an essay or exam question about. For instance, you will write a much better essay on explanation if you have a good understanding of causation and laws of nature.

Items with a star (*) are accessible introductions to the subject which it may be helpful to read first. Items with an octothorpe (#) are more optional items which may be more helpful for those planning to write an essay or exam question on the topic, rather than being

required merely to get a grip on the material covered in the lectures. One book that I would recommend that you try to borrow or buy is:

Okasha, S. 2002. *Philosophy of Science: A Very Short Introduction*, Oxford University Press, Oxford (hereafter referred to as 'Okasha').

It is Very Short, as the name suggests, and also Very Cheap (current RRP £7.99).

Lecture 1: Introduction, and Hume's problem

(1) Hume, D. 1777. "Sceptical Doubts Concerning the Operation of the Understanding", section 4, part 2 of *An Enquiry Concerning Human Understanding*, Selby-Bigge edition, 3rd edition, Oxford University Press. (An e-book edition of Hume's *Enquiry* is available through the Nottingham library website.)

(2) Chalmers, A. *What is this Thing called Science?*, 3rd edition, Open University Press, Maidenhead. chapter 4

(3#) Strawson, P. 1958. "On Justifying Induction", in *Philosophical Studies* 9.

(4#) Swinburne, R. (ed.) 1974, *The Justification of Induction*, Oxford University Press.

(5*) Okasha, chapters 1 and 2

Lecture 2: Falsificationism

(1) Popper, K. 1971. "Conjectural Knowledge: My Solution to the Problem of Induction" in Popper, K. *Objective Knowledge, An Evolutionary Approach*. Clarendon, Oxford. pp 1-31

(2#) Chalmers, A. 1999. *What is this Thing called Science?*, 3rd edition, Open University Press, Maidenhead. chapters 5-7

(3#) Putnam, H. 1974. "The 'Corroboration' of Theories" in *The Philosophy of Karl Popper volume I*, ed. Schilpp, P., Open Court, La Salle, Illinois. pp. 221-240. Reprinted in Putnam, H. 1975. *Mathematics, Matter and Method*, Cambridge University Press. pp. 250-269. The other essays in this collection may also be helpful. The collection also includes Popper's replies to his critics.

(4#) Popper, K. 1959. *The Logic of Scientific Discovery*. Hutchinson, London. (The revised edition, 1968, is fine as well.) The classic statement of falsificationism.

(5*) Thornton, S. *Stanford Encyclopedia of Philosophy Online* entry on Popper:

<http://www.seop.leeds.ac.uk/entries/popper/>

Lecture 3: Goodman's Problem

(1) Goodman, N. 1965. "The New Riddle of Induction", in his *Fact, Fiction and Forecast*, Bobbs-Merrill, Indianapolis. pp 59-83

(2#) Cohnitz, D. and Rossberg, M. 2006. *Nelson Goodman*, Acumen, Bucks. pp. 40-45

(3#) Stalker, D. 1994. "Introduction" to his edited collection *Grue!*, Open Court, Chicago and La Salle. pp 1-18. The other essays in this collection may also be helpful.

(4*) Elgin, C. *Routledge Encyclopedia of Philosophy Online* entry on "Goodman", section 3:

<http://www.rep.routledge.com/article/M045SECT3>

Lecture 4: Theory and Observation

(1) Hanson N. 1988. "Observation" in Klemke, E., Hollinger, R. and Kline, A.D. (ed.s) 1994, *Introductory Readings in the Philosophy of Science*, Prometheus Books, Buffalo, N.Y.. pp 184-195

(2#) Fodor, J. 1988. "Observation Reconsidered", *Philosophy of Science*, 51, 1984, pp 23-43

(3#) Churchland, P. 1988. "Perceptual Plasticity and Theoretical Neutrality", *Philosophy of Science* 55, pp 167-187

(4#) Fodor, J. 1988. "A Reply to Churchland's 'Perceptual Plasticity and Theoretical Neutrality'", *Philosophy of Science*, 55, pp 188-198

(5*) Kosso, P. *Routledge Encyclopedia of Philosophy Online* entry on "Observation", esp. sections 3 and 4: <http://www.rep.routledge.com/article/Q076>

Lectures 5 and 6: Realism and Instrumentalism

- (1) Chalmers, A. *What is this Thing called Science?*, 3rd edition, Open University Press, Maidenhead. chapter 13
- (2) Boyd, R. *Stanford Encyclopedia of Philosophy Online* entry on "Scientific Realism": <http://www.seop.leeds.ac.uk/entries/scientific-realism/>
- (3#) Boyd, R. 1983. "On The Current Status of Scientific Realism", in *Erkenntnis* 19, reprinted with alterations in Boyd, R., Gasper, P. and Trout, J. (ed.s) 1991, *The Philosophy of Science*. MIT Press, Cambridge MA. pp 195-222.
- (4#) Worrall, J. 1989. "Structural Realism: The Best of Both Worlds?", in *Dialectica* 43, reprinted in Papineau (ed.) 1996 *The Philosophy of Science*, Oxford University Press. pp. 139-165.
- (5#) Downes, S. *Routledge Encyclopedia of Philosophy Online* entry on "Constructivism": <http://www.rep.routledge.com/article/Q017>
- (6#) Ladyman, J. *Stanford Encyclopedia of Philosophy Online* entry on "Structural Realism": <http://www.seop.leeds.ac.uk/entries/structural-realism/>
- (7*) Okasha, chapter 4

Lecture 7: Explanation

- (1) Woodward, J. *Stanford Encyclopedia of Philosophy Online* entry on "Scientific Explanation": <http://www.seop.leeds.ac.uk/entries/scientific-explanation/>
- (2#) Hempel, C. 1966. "Laws and Their Role in Scientific Explanation", in his *Philosophy of Natural Science*, Prentice Hall, Englewood Cliffs pp 47-69
- (3#) Lewis, D. 1986. "Causal Explanation", in his *Philosophical Papers Volume II*, Oxford University Press, reprinted in Ruben, D.-H. (ed.) 1993. *Explanation*. Oxford University Press, pp. 182-206.
- (4#) Lipton, P. 1990. "Contrastive Explanation", in Knowles, D. (ed.) *Explanation and Its Limits*, Cambridge University Press, reprinted in Ruben, D.-H. (ed.) 1993. *Explanation*. Oxford University Press, pp. 207-27.
- (5*) Okasha, chapter 3

Lecture 8: Laws of Nature

- (1) Nagel, E. 1961. "The Logical Character of Scientific Laws", in Nagel, E. 1961, *The Structure of Science*, Routledge and Kegan Paul, London. pp 47-78
- (2#) Tooley, M. 1977. "The Nature of Laws", *Canadian Journal of Philosophy* 7, pp. 667-698
- (3#) Hempel, C. and Oppenheim, P. 1948. "Studies in the Logic of Explanation", *Philosophy of Science* 15, pp. 135-175. section 6
- (4*) Carroll, J. *Stanford Encyclopedia of Philosophy* entry on "Laws of Nature": <http://www.seop.leeds.ac.uk/entries/laws-of-nature/>

Lecture 9: Causation

- (1) Lewis, D. 1973. "Causation", reprinted in Sosa, E and Tooley, M. (ed.s) 1993. *Causation*, Oxford University Press, Oxford. pp 193-204
- (2#) Menzies, P. *Stanford Encyclopedia of Philosophy* entry on "Counterfactual Theories of Causation": <http://www.seop.leeds.ac.uk/entries/causation-counterfactual/>
- (3#) Schaffer, J. *Stanford Encyclopedia of Philosophy* entry on "The Metaphysics of Causation": <http://www.seop.leeds.ac.uk/entries/causation-metaphysics/>
- (4#) Tooley, M. 1990. "Causation: Reductionism vs. Realism", in *Philosophy and Phenomenological Research* 50 (supplement), reprinted in Sosa, E. and Tooley, M. (ed.s) 1993. *Causation*, Oxford University Press, Oxford. pp 172-192. The other papers in this collection may also be helpful.
- (5*) N. Cartwright, *Routledge Encyclopedia of Philosophy Online* entry on "Causation": <http://www.rep.routledge.com/article/Q010>

Lecture 10: Exam Information/Revision/Catch-Up

Relevant reading for lecture 10 will be announced in previous lectures. This lecture will include information and advice about the exam. Other topics to be covered during this lecture will depend on:

- (a) whether there is any material left over from earlier lectures and
- (b) which issues students would most like to revisit.