Course Overview

PHIL3070 - Scientific Knowledge & Scientific Method
Course Outline

Semester                  Semester 2 - 2008
Unit Weighting            10
Teaching Methods          Lecture

Brief Course Description
Introduces the nature of scientific method and the grounds of scientific knowledge as expressions of scientific rationality for both science and humanities students.

Contact Hours
Lecture for 2 Hours per Week for the Full Term

Learning Materials/Texts
There is no set text. Relevant materials will be placed on Short Loans.

Course Objectives
(1) to give students a knowledge of the nature and basic principles of rational scientific method and knowledge claims.

Course Outline Issued and Correct as at: Week 1, Semester 2 - 2008

CTS Download Date: 3.7.08
(2) to impart to students the skills required for them to be able to engage in critical assessment of scientific practice and in evaluation of scientific knowledge.

(3) to enable students to effectively communicate their understanding and to interact effectively so as to problem solve with diverse communal groups.

(4) to provide students a critical appreciation of the larger framework of Western science as it has developed in relation to society and within which current science practice operates.

Course Content
The course covers the nature of rationally valid argument and its application to scientific method as prediction/explanation, its inadequacy for theory construction and the consequent problems of rational methodology, including induction and statistical inference. It then places these issues in the larger debate about the nature of observation, the multiple aims of science, and economic and socio-cultural influence on theoretical ideas and procedures, and the various proposals made in the light of these concerning the nature of scientific knowledge and objectivity claims.

Assessment Items
Assessment for PHIL3070 will be by written work which will be individually structured to suit the subject matter. It will normally be by 2 essays, one of 2000 words, 40%, the other of 3000 words, 60%, but this may be varied to include more frequent, smaller case studies, summaries and the like earlier on, to equivalent value, as the subject matter requires. These essays will require the student to explain the central concepts, principles and arguments of the material studied, guided by the assigned readings and seminar discussions, the latter providing continual assessment and feedback on individual student ability to properly engage the subject matter.

Assumed Knowledge
At least 10 credit points of PHIL course at 1000 level or 40 units of any other courses at any level.

Callaghan Campus Timetable
PHIL3070
SCI KNOWLEDGE & SCI METHOD
Enquiries: School of Humanities and Social Science
Semester 2 - 2008
Lecture Thursday 11:00 - 13:00 [MCG29]

Plagiarism
University policy prohibits students plagiarising any material under any circumstances. A student plagiarises if he or she presents the thoughts or works of another as one’s own. Without limiting the generality of this definition, it may include:

- copying or paraphrasing material from any source without due acknowledgment;
- using another’s ideas without due acknowledgment;
- working with others without permission and presenting the resulting work as though it was completed independently.

Plagiarism is not only related to written works, but also to material such as data, images, music, formulae, websites and computer programs.

Aiding another student to plagiarise is also a violation of the Plagiarism Policy and may invoke a penalty.

For further information on the University policy on plagiarism, please refer to the Policy on Student Academic Integrity at the following link -

School of Humanities and Social Science
The University has established a software plagiarism detection system called Turnitin. When you submit assessment items please be aware that for the purpose of assessing any assessment item the University may -

- Reproduce this assessment item and provide a copy to another member of the University; and/or
- Communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the item on its database for the purpose of future plagiarism checking).
- Submit the assessment item to other forms of plagiarism checking

**Written Assessment Items**

Students may be required to provide written assessment items in electronic form as well as hard copy.

**Marks and Grades Released During Term**

All marks and grades released during the term, are indicative only until formally approved by the Head of School on the recommendation of the School Assessment body.

**Extension of Time for Assessment Items, Deferred Assessment and Special Consideration for Assessment Items or Formal Written Examinations**

Students are required to submit assessment items by the due date, as advised in the Course Outline, unless the Course Coordinator approves an extension of time for submission of the item. University policy is that an assessment item submitted after the due date, without an approved extension, will be penalised.

Any student:

1. who is applying for an extension of time for submission of an assessment item on the basis of medical, compassionate, hardship/trauma or unavoidable commitment; or

2. whose attendance at or performance in an assessment item or formal written examination has been or will be affected by medical, compassionate, hardship/trauma or unavoidable commitment;

must report the circumstances, with supporting documentation, to the appropriate officer following the instructions provided in the Special Circumstances Affecting Assessment Procedure - Policy 000641.

Note: different procedures apply for minor and major assessment tasks.

Please go to the Policy at [http://www.newcastle.edu.au/policylibrary/000641.html](http://www.newcastle.edu.au/policylibrary/000641.html) for further information, particularly for information on the options available to you.

Students should be aware of the following important deadlines:

- **Requests for Special Consideration** must be lodged no later than 3 working days after the due date of submission or examination.

- **Requests for Extensions of Time on Assessment Items** must be lodged no later than the due date of the item.

- **Requests for Rescheduling Exams** must be received no later than ten working days prior the first date of the examination period.
Your application may not be accepted if it is received after the deadline. In the first instance, students who are unable to meet the above deadlines due to extenuating circumstances should speak to their Program Officer or their Program Executive if studying in Singapore.

**Changing your Enrolment**

The census dates below are the last dates to withdraw without academic penalty. For onshore students, withdrawal on or before the census date means no financial penalty.

- For semester 1 courses: 31 March 2008
- For semester 2 courses: 31 August 2008
- For Trimester 1 courses: 18 February 2008
- For Trimester 2 courses: 9 June 2008
- For Trimester 3 courses: 22 September 2008
- For Trimester 1 Singapore courses: 3 February 2008
- For Trimester 2 Singapore courses: 25 May 2008

Students may withdraw from a course without academic penalty on or before the last day of semester. Any withdrawal from a course after the last day of semester will result in a fail grade.

Students cannot enrol in a new course after the second week of semester/trimester, except under exceptional circumstances. Any application to add a course after the second week of semester/trimester must be on the appropriate form, and should be discussed with staff in the Student Hubs or with your Program Executive at PSB if you are a Singapore student.

To check or change your enrolment online, please refer to myHub - Self Service for Students

[https://myhub.newcastle.edu.au](https://myhub.newcastle.edu.au)

**Faculty Information**

The Student Hubs are a one-stop shop for the delivery of student related services and are the first point of contact for students studying in Australia.

The four Student Hubs are located at:

**Callaghan campus**

- Shortland Hub: Level 3, Shortland Union Building
- Hunter Hub: Student Services Centre, Hunter side of campus

**City Precinct**

- City Hub & Information Common: University House, ground floor in combination with an Information Common for the City Precinct

**Ourimbah campus**

- Ourimbah Hub: Administration Building

For Port Macquarie students, contact your program officer or [EnquiryCentre@newcastle.edu.au](mailto:EnquiryCentre@newcastle.edu.au), phone 4921 5000
For Singapore students, your first point of contact is your PSB Program Executive

**Faculty websites**

Faculty of Business and Law  

Faculty of Education and Arts  
http://www.newcastle.edu.au/faculty/education-arts/

Faculty of Engineering and Built Environment  
http://www.newcastle.edu.au/faculty/engineering/

Faculty of Health  
http://www.newcastle.edu.au/faculty/health/

Faculty of Science and Information Technology  
http://www.newcastle.edu.au/faculty/science-it/

**Contact details**

**Callaghan, City and Port Macquarie**  
Phone: 02 4921 5000  
Email: EnquiryCentre@newcastle.edu.au

**Ourimbah**  
Phone: 02 4348 4030  
Email: EnquiryCentre@newcastle.edu.au

**The Dean of Students**  
Resolution Precinct  
Phone: 02 4921 5806  
Fax: 02 4921 7151  
Email: resolutionprecinct@newcastle.edu.au

**Deputy Dean of Students (Ourimbah)**  
Phone: 02 4348 4123  
Fax: 02 4348 4145  
Email: resolutionprecinct@newcastle.edu.au

Various services are offered by the University Student Support Unit:  

**Alteration of this Course Outline**

No change to this course outline will be permitted after the end of the second week of the term except in exceptional circumstances and with Head of School approval. Students will be notified in advance of any approved changes to this outline.

**Web Address for Rules Governing Undergraduate Academic Awards**  

**Web Address for Rules Governing Postgraduate Academic Awards**  
STUDENTS WITH A DISABILITY OR CHRONIC ILLNESS

The University is committed to providing a range of support services for students with a disability or chronic illness.

If you have a disability or chronic illness which you feel may impact on your studies, please feel free to discuss your support needs with your lecturer or course coordinator.

Disability Support may also be provided by the Student Support Service (Disability). Students must be registered to receive this type of support. To register please contact the Disability Liaison Officer on 02 4921 5766, or via email at: student-disability@newcastle.edu.au

As some forms of support can take a few weeks to implement it is extremely important that you discuss your needs with your lecturer, course coordinator or Student Support Service staff at the beginning of each semester.

For more information related to confidentiality and documentation please visit the Student Support Service (Disability) website at: www.newcastle.edu.au/services/disability

Studentmail and Blackboard: Refer - www.blackboard.newcastle.edu.au/

This course uses Blackboard and studentmail to contact students, so you are advised to keep your email accounts within the quota to ensure you receive essential messages. To receive an expedited response to queries, post questions on the Blackboard discussion forum if there is one, or if emailing staff directly use the course code in the subject line of your email. Students are advised to check their studentmail and the course Blackboard site on a weekly basis.

Important Additional Information

Details about the following topics are available on your course Blackboard site (where relevant). Refer - www.blackboard.newcastle.edu.au/

- Written Assignment Presentation and Submission Details
- Online copy submission to Turnitin
- Return of Assignments
- Preferred Referencing Style
- Student Communication
- Essential Online Information for Students

Some general information about the course.

REQUIRED TEXTS:
There are no required texts for this subject. Relevant texts will be placed on Short Loans, and for some sections of the course, notes will be provided.

RECOMMENDED TEXTS:
One book that you might find helpful is W. H. Newton-Smith The Rationality of Science. Some other useful books are David Chalmers What is this thing called Science?, Karl Popper Conjectures and Refutations and Thomas Kuhn The Structure of Scientific Revolutions.
SYLLABUS:
It is intended that the course of lectures will follow (more or less) the following format. However, it should be recognised that unforeseen circumstances might mean we could depart a little from this proposed schedule:

**SCHEDULE OF LECTURES**

WEEK ONE:
- What is philosophy of science?
- Why study philosophy of science?
- Methodology
  * Inductivism
  * The inductive-empiricist view of science.
- Hume’s Argument against induction.

WEEK TWO:
- Hume’s Argument Against induction - continued.
- Attempts to reply to Hume.
  * Reichenbach, uniformity of nature, inductive justification of induction, Clendinnen, BonJour and others. The appeal to probability.

WEEK THREE:
- Further analysis of attempts to reply to Hume.
  * The linguistic justification of induction, Strawson, Moore and others. Inductive scepticism and its consequences. Russell.

WEEK FOUR:
- More problems for inductivism.
  * The priority of theory to observation.

WEEK FIVE:
- The Philosophy of Science of Karl Popper.
  * The concept of falsifiability.
  * Popper’s conception of science as falsifiable conjectures.

WEEK SIX:
- Popper’s Philosophy of Science - continued.
  * Degrees of falsifiability
  * Falsifiability and content.
  * Poppers’ argument for claim that Probability of laws is zero.
WEEK SEVEN:
Truth, Verisimilitude and Corroboration.

WEEK EIGHT:
The concept of falsifiability
* Problems with falsifiability
* Holism
* Popper on the asymmetry of verification and falsification.

WEEK NINE:
The Popper/Kuhn Controversy
* Kuhn’s criticisms of Popper. Popper’s replies.
* The relation between the History of Science and the Philosophy of Science.

WEEK TEN:
T. S Kuhn’s Philosophy of Science.
* Normal science and revolutionary science. Scientific revolutions.
* Paradigms
* Theory comparison. Kuhn on “incommensurability”.
* Criticisms of Kuhn.

WEEK ELEVEN:
Imre Lakatos’s View of Science.
* Lakatos on the History of Science versus the Philosophy of Science.
* The methodology of scientific research programmes.
* The hard core and the auxiliary belt.
* Progressive and degenerating problem shifts.
* Lakatos on Newton’s theory of the solar system.

WEEK TWELVE:
Paul Feyerabend’s scepticism about methodology
* Feyerabend’s sceptical arguments.
* Feyerabend’s “anarchism”.

WEEK THIRTEEN:
Scientific Realism.
* Realism versus Instrumentalism
* Maxwell on Realism
* The concept of novel predictive success
* Fine on Realism
* Structural Realism
* Recent developments