

# History and philosophy of science

Teaching in the history and philosophy of science (HPS) began at the University of Melbourne in 1946. The program has developed since then to become the leading HPS department in Australia. HPS offers students a learning environment that bridges the gap between the two cultures of science and the humanities. Students have the opportunity to explore historical, philosophical and sociological perspectives on science and technology. This unique mix of literacies helps prepare students for a wide range of science-related professional careers.

Teaching in HPS is closely linked to current research, which ranges from the foundations of statistics and the nature of scientific reasoning, through a variety of historical projects, to the social impact of new technologies.

The high profile enjoyed by the department, both nationally and internationally, attracts staff, students and visiting scholars of the highest calibre, to create a rich and vibrant culture of learning and research.

## Prerequisites

There are no prerequisites for first year HPS subjects.

For science students there are no prerequisites for second/third year HPS subjects beyond admission to second year.

For arts students and students of faculties other than science the prerequisite for a second/third year HPS subject is usually 75 points of first year study in any discipline area.

The prerequisite for a third/fourth year subject in HPS is usually two second/third year subjects in HPS.

## Requirements for a major

### History and philosophy of science major

The requirements for a co-major in science are set out in *Majors* (p.8). A major in HPS usually consists of nine 12.5 point subjects, totalling 112.5 points. It comprises:

- two first year subjects in HPS (25 points) and;
- seven second/third year subjects in HPS (totalling 87.5 points), which must include 12.5 points in two of the following areas:
  - history of science
  - philosophy of science
  - sociology of science and;
 at least one of the following:
  - 136-052 Science as Practice and Culture (p.4)
  - 136-054 Controversies in Philosophy of Science (p.4)
  - 136-055 Approaches to the History of Science (p.5).

BA students may take up to three philosophy subjects towards their major in HPS. Subjects from the list below will be approved automatically. Other subjects may be approved by the Head of Department if the content is deemed appropriate.

- 161-003 Critical Thinking: The Art of Reasoning (p.2)
- 161-115 Introduction to Formal Logic (p.3)
- 161-210 Philosophy of Logic (p.5)
- 161-212 Non-Classical Logic (p.5)
- 161-009 Knowledge, Truth and Relativism (p.3)
- 161-033 Philosophical Problems of Space and Time (p.5)

### Logic and philosophy of science major

A major in logic and philosophy of science combines subjects taught by the Department of Philosophy and the Department of History and Philosophy of Science. Logic and philosophy of science is an area of study which addresses questions about the structure of inference, the nature of knowledge, and the methodology and metaphysics of science. Students who undertake a major in logic and philosophy of science are able to pursue a course of study which draws together subjects in logic and the philosophy of science, and related areas.

A major in logic and philosophy of science consists of nine 12.5 point subjects, totalling 112.5 points, see *Logic and philosophy of science major* (p.1). Students who complete a major in logic and philosophy of science at a satisfactory level (minimum of H2A average within the major) may undertake combined honours in philosophy and HPS. They may not however be eligible for admission to pure honours in either department. Students wishing to undertake pure honours in either department should consult with the relevant honours coordinator for advice on how to design their course to meet depart-

mental entry requirements for pure honours. For full details of the list of subjects which may be taken as part of this major, see page 1.

## Honours entry

The requirements for science honours are set out in *Bachelor of Science (Honours) and Bachelor of Information Systems (Honours)* (p.1). The prerequisites for entry to the Bachelor of Arts (Honours) in HPS are:

- completion of all the requirements for the BA and;
- completion of a major in HPS, which includes 12.5 points in two of the following areas:
  - history of science
  - philosophy of science
  - sociology of science and;
 at least one of the following:
  - 136-052 Science as Practice and Culture (p.4)
  - 136-054 Controversies in Philosophy of Science (p.4)
  - 136-055 Approaches to the History of Science (p.5) and;
- An average grade of H2B or higher over the second/third year subjects within the major.

## Honours requirements

### Pure honours

Students undertaking pure honours in HPS must complete:

- 136-501 HPS Thesis (p.6) (50 points) or 136-520 HPS Thesis (MYE) (p.6) (50 points) and;
- four honours subjects in HPS (totalling 50 points) and;
- participation in a research methodology unit.

Honours and postgraduate diploma students may take up to two existing honours subjects offered by the Department of Philosophy towards their fourth year studies in HPS. Subjects from the following list will be approved automatically. Other subjects may be approved on a case-by-case basis.

- 161-434 Epistemology and Metaphysics (p.9)
- 161-440 Philosophical Psychology (p.9)
- 161-445 Current Issues in Philosophy (p.7)
- 161-447 Logic (p.7)
- 161-436 Issues in Analytic Metaphysics (p.7)

Enrolment in all cases must be approved by the HPS fourth year coordinator and a Faculty of Arts course adviser.

No more than three philosophy and/or philosophy of science subjects may be taken as part of HPS honours. That is, pure honours in HPS must include at least one subject in an area other than the philosophy of science (or philosophy).

### Combined honours

Students intending to undertake combined honours in HPS and another area of study should consult the HPS honours coordinator about structuring their course.

## Further study

A BA with honours in HPS can lead to an MA by advanced seminars and shorter thesis or by research thesis alone, or to a PhD. Students interested in postgraduate study should collect a copy of the separate postgraduate brochure and contact the departmental office to make an appointment to see the postgraduate coordinator.

## For more information

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## First year subjects

### 136-028 History of Astronomy

**Note:** Formerly available as 136-101. Students who have completed 136-101 History of Astronomy are not eligible to enrol in this subject.

**Availability:** 1st year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Keith Hutchison

**Contact:** Two 1-hour lectures and a 1-hour tutorial per week (*Semester 1*).

**Description:** This subject examines a dramatic change in European conceptions of the universe that took place during the 16th and 17th centuries. In the Middle Ages, humanity saw itself as occupying a unique Earth, the focus of God's attention. It imagined the universe as finite and hierarchical, following an efficient computational cosmology developed by the ancient Greeks. In the 16th century, the astronomer Copernicus proposed that the Sun was at the centre of the universe while the Earth orbited the Sun as one of the planets. A few astronomers took his idea seriously, and eventually managed to convert the educated world to the Copernican theory. With the idea that the Earth was just another planet came the idea that the Sun was just another star, and also the modern conception of space as effectively infinite, plus the possibility that life existed elsewhere. What made people change their view of the universe so drastically? How good was the evidence produced by Copernicus' followers? Were there other reasons, perhaps religious or political, for accepting or opposing the new cosmology? Why did people care so greatly whether the Earth moved? These are the sorts of questions which are central to the subject. Students who successfully complete this subject will be capable of displaying an improved understanding of the above issues.

**Assessment:** Written work totalling 2000 words, and a 2-hour examination. Exemption from the examination may be granted on the basis of further written work and/or a class test late in the semester.

**Prescribed texts:** A subject reader will be available.

T Kuhn, *The Copernican Revolution*.

### 136-030 Human Values, Science, and Nature

**Note:** Students cannot enrol in this subject if they completed 136-226/326 prior to 1996 or 136-103 prior to 1999.

**Availability:** 1st year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Helen Verran

**Contact:** Two 1-hour lectures and a 1-hour tutorial per week (*Semester 1*).

**Description:** This subject asks, how should we analyse the relationship between nature, science, and society? Current theoretical approaches to the study of science in society will be discussed. The relations between nature, science and colonising, and the development of museums may be examined as case studies. On completion of the subject students should be familiar with current theoretical approaches to analysing science in society and be able to use these theoretical approaches to examine the relationship between values, science, and nature.

**Assessment:** Written work totalling 4000 words. There is a hurdle requirement of 80% attendance at tutorials.

**Prescribed texts:** A subject reader will be available.

### 136-031 Science, Philosophy and History

**Note:** Formerly available as 136-105. Students who have completed 136-105 Science Philosophy and History are not eligible to enrol in this subject.

**Availability:** 1st year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Contact:** Up to 36 hours of tutorials and lectures (*Semester 2*).

**Description:** In this subject students will deal with such vital philosophical issues as, Can science prove a theory is true? What, if anything, is wrong with pseudo-science? Students will also tackle historical and political issues such as, Is it ever reasonable to not believe what scientists say? What should science's role in society be? The readings are from the history, sociology and philosophy of science. Students completing this subject should better understand that science is a remarkably complex and often beautiful result of an intricate set of forces: conceptual and experimental but also economic, social and individual factors.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available.

Chalmers, *What is This Thing Called Science?*, 3rd ed.

### 136-032 The Ecological History of Humankind

**Note:** Formerly available as 136-175. Students who have completed 136-175 Health, Ecology and History are not eligible to enrol in this subject.

**Availability:** 1st year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Janet McCalman

**Contact:** Two 1-hour lectures and a 1-hour tutorial per week (*Semester 2*).

**Description:** This subject explores the relationship between biological facts (those governing health and disease) and the social structures and behaviours which affect them. 'Ecological' means the inter-relationship between life

forms and their environment - between disease organisms and human hosts, food supplies, climate and physical environment. But the organisation of societies also affects these ecologies, for instance the mobility and low density of hunter-gatherer societies prevented the rise of many infectious diseases. However diseases have moved around the world with migrations of peoples (cholera), along trade routes (the Black Death), and through the dislocations of warfare (influenza, typhus), and played a major role in the conquest of native peoples in colonialism. Students who complete this subject should have a broad understanding of the history of human nutrition and population growth, and an understanding of the effect of disease on society as well as the effect of society on disease.

**Assessment:** Written work totalling 4000 words. There is a hurdle requirement of 80% attendance at tutorials.

**Prescribed texts:** W H McNeill, *Plagues and Peoples*. • J Diamond, *Guns, Germs and Steel, The Fates of Human Societies*.

### 136-110 The Risk Society: Remaking Everyday Life

**Availability:** 1st year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** A Prof McCalman, Drs J Cash & R Robins

**Prerequisites:** No prerequisites.

**Contact:** A 1-hour lecture and a 1.5 hour tutorial per week (*Semester 2*).

**Description:** This subject examines ways in which discourses and practices of science, technology and medicine have become central to the management of risk and the organisation of everyday life. Generating dilemmas of trust, scepticism and cynicism, such discourses and practices have become politicised aspects of the contemporary 'risk society'. We all participate in this risk politics and we are all affected by its deliberations and decisions, particularly in the ways in which we imagine our social and individual identities. This subject will introduce students to debates about risk society illustrated by case studies. These may include the new genetics as risk and responsibility; food risks, mad cow disease and gene technology; subjectivity in cybersociety; environmental risk and the dilemmas of trust; medical knowledge and the dilemmas of choice. Students will develop an understanding of the risk society debate and substantive knowledge of several exemplary case studies.

**Assessment:** Class participation, and written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available.

## Second/third year subjects

### 103-005 Cybersociety

**Note:** Students who have completed 103-210/310 Cybersociety: Information Technology, Society and Self are not eligible to enrol in this subject.

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Michael Arnold

**Contact:** A 1-hour lecture and a 2-hour tutorial/practical session per week (*Semester 1*).

**Description:** In this subject students will engage in a study of high-technology and information systems in a social and cultural context, and will examine critical issues which lie at the intersection of the social and the technical. Topics covered include cybernetics, cyberspace, cyborgs and other 'cybers', virtual lives and virtual communities, the information economy, privacy and surveillance, digital convergence, multimedia and hypermedia, techno-utopian and dystopian visions. Students will participate in theoretical work and 'hands-on' experience. Students who successfully complete this subject should be able to critically analyse and evaluate controversial issues relating to information systems in the social context, argue credible positions in relation to these controversies, and be able to identify and draw upon the major theoretical and methodological discourses through which the relationship between information systems and society might be understood.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available.

W Gibson, *Neuromancer*, Grafton Books, 1986. • N Stephenson, *Snow Crash*, Penguin, 1993.

### 136-029 Darwinism

**Note:** Formerly available as 136-102. Students who have completed 136-102 Darwinism are not eligible to enrol in this subject. Available at second and third year, except in Science (second year only). For science third year, see 136-329 Darwinism (Science 3) (p.5).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Ross Jones

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials; and between 20 and 24 lectures, normally two per week (*Semester 2*).

**Description:** This subject involves an exploration of the work of Charles Darwin and other theories of evolution in the 19th and 20th centuries. The social and scientific background of evolutionary theories in Great Britain, Germany, the United States and Australia will be compared. The relations between biological claims and social theories will be examined, through topics such as social Darwinism, racial science, evolution of sex and gender, behaviourism, evolution of the mind, eugenics, sociobiology, environmentalism, and science and religion. The popular understanding of Darwinism through literature and films will also be explored. This subject should be of interest to any students who wish to learn more about the origins of the life sciences.

**Assessment:** Written work totalling 3000 words, and an in-class test of 1000 words.

**Prescribed texts:** A Desmond & J Moore, *Darwin*, 1992. • P Appleman, *Darwin: Texts, Backgrounds, Contemporary Opinion, Critical Essays*, 1979.

### 136-033 Science, Reason and Reality

**Note:** Formerly available as 136-202/302. Students who have completed 136-202 or 136-302 Science, Reason and Reality are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-333 Science, Reason and Reality (Science 3) (p.5).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject addresses some of the central issues in the philosophy of science. It will raise questions such as what is the difference between science and non-science? Is there a universal scientific method? Or do the methods employed by scientists vary historically? Is scientific theory change a rational process? Is science objective? Do scientific theories inform us of the truth about the world? Students who take this class will have knowledge of the major themes of recent and contemporary philosophical thinking about science. They will also have experience of the methods of critical analysis and argument employed in the philosophy of science and a background on which to base further study in the area.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A Chalmers, *What is This Thing Called Science?*. • M Curd & J A Cover, *Philosophy of Science: The Central Issues*. • I Hacking, *Representing and Intervening*.

### 136-034 Science, Life and Mind

**Note:** Formerly available as 136-203/303. Students who have gained credit for 136-203 or 136-303 Science, Life and Mind are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-334 Science, Life and Mind (Science 3) (p.5).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** Science depends on people being able to rationally investigate reality. Recent advances in cognitive psychology and evolutionary theory enable us to better understand how human rationality is possible and thus how science is possible. This subject deals with such historical and philosophical questions as, How do scientists determine the standard for good reasoning? What are those standards? How accurate are their judgements? On successful completion of this subject students should be familiar with the major philosophical theories of rationality; with the psychological, sociological and biological evidence regarding human rationality and irrationality; and have developed a better understanding of the relationships between the philosophical, biological, and psychological positions.

**Assessment:** Written work totalling 4000 words.

### 136-037 Issues in the Modern Life Sciences

**Note:** Formerly available as 136-222/322. Students who have completed 136-222 or 136-322 Issues in the Modern Life Sciences are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-337 Biotechnology in Modern Society (Sci.3) (p.5).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Rosemary Robins

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject will introduce students to selected research and commercial applications of modern biotechnology in order to discuss the broader issues that arise from them. A range of topics will be covered in this subject, which may include the recombinant DNA debate, biotechnology in agriculture, genetically modified food, pharmaceutical production, cloning, the human genome project, genetic testing and gene therapy. Students will consider some of the social, ethical, risk, and regulatory issues that arise from these applications of modern biotechnology and will examine some of the debates about these issues that have taken place in the wider community.

**Assessment:** Written work totalling 3000 words, and an in-class test of 1000 words.

**Prescribed texts:** A subject reader will be available.

### 136-038 The Scientific Revolution

**Note:** Formerly available as 136-224/324. Students who have completed 136-224 or 136-324 The Scientific Revolution are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-338 The Scientific Revolution (Science 3) (p.5).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Keith Hutchison

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject surveys a constellation of important changes in the thinking of educated people in 17th century Europe - a group of changes commonly referred to as 'The Scientific Revolution'. Students will examine the official philosophy of the Middle Ages, scholasticism and its notion that material objects were innately active; the appeal of alternative 17th century views of the matter as utterly passive; Descartes' mechanical philosophy; the Newtonian retreat from extreme mechanism; the impact of sceptical attacks on the reliability of human reason; and the acceptance of a science that was self-confessedly tentative and hypothetical. Throughout the subject, the complexity of the processes governing the acceptance of a philosophy of nature is emphasized and discussion is placed into its broader contexts with religious and political connections repeatedly perused. Students who successfully complete this subject will be capable of displaying an improved understanding of the above issues.

**Assessment:** Written work totalling 2000 words, and a 2-hour examination. Exemption from the examination may be granted on the basis of a class presentation and two class tests.

**Prescribed texts:** A subject reader will be available.

Descartes, D Cress (trans), *Meditations on first philosophy*, Hackett. • J Henry, *The Scientific Revolution and the Origins of Modern Science*, Macmillan.

### 136-039 Medicine and Society

**Note:** Formerly available as 136-225/325. Students who have completed 136-225 or 136-325 Medicine and Society are not eligible to enrol in this subject. Available at second and third year, but not available for science credit.

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Ross Jones

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject is a survey of biomedical science over the past two to three centuries, emphasizing the experience and understanding of health and disease in a range of cultural settings. Topics include the social impact and conceptualisation of epidemic disease; the character of epidemiological and demographic change; the framing of diseases such as chronic fatigue and AIDS; the development of therapeutics, technologies, and institutions associated with medical sciences; alternative medicine; and the health of women and Aborigines. On successful completion of the subject students should be able to evaluate the role of biomedical science in addressing social needs, as well as the social and economic determinants of health and disease.

**Assessment:** Written work totalling 4000 words.

### 136-040 Science Technology and Society

**Note:** Formerly available as 136-226/326. Students who have completed 136-226 or 136-226 Science, Technology and Society are not eligible to enrol in this subject. Available at levels second and third year, except in science (second year only). For science third year, see 136-340 Science Technology & Society (Science 3) (p.6).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Helen Verran

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Two 1-hour lectures and a 1-hour tutorial per week (*Semester 2*).

**Description:** This subject examines the theoretical/conceptual frameworks within which science, technology and society can be analysed as mutually constitutive. Students will proceed through a series of case studies: how can we understand the process of building Gothic cathedrals?; examining the constitution of nature in TV wildlife documentaries; considering how Robert Boyle's airpump intervened in Restoration England; asking how zoos and science museums give us stories to live by. The case studies will be developed using video materials and site visits. Students who complete this subject should develop an understanding of, and ability to think critically about, the ways technologies and scientific knowledge claims are influenced by social, cultural and historical contexts.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available.

### 136-042 Science in Australian Society

**Note:** Formerly available as 136-227/327. Students who have completed 136-227 or 136-327 Science in Australian Society are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-342 Science in Australia (Science 3) (p.6).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Prof Rod Home

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 2*).

**Description:** This subject will analyse key themes in the development of science in Australia since 1788, setting Australian work in the context of the scientific ideas generally held at the time and examining the conceptual, social and institutional factors that shaped local developments. Current debates about the establishment of science in other emergent countries as well as Australia will provide a comparative context. On completion of the subject students should be familiar with the main lines of development of science in Australia since 1788, with the social and institutional factors that have shaped its development, and be able to critically assess relevant historical source material.

**Assessment:** Written work which may comprise class papers and essays totalling 2000 words, and a 2-hour examination.

### 136-045 Fact, Fiction & Fraud in the Digital Age

**Note:** Not available for science credit.

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Gavan McCarthy

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Contact:** Between 10 and 12 weekly lectures and between 20 and 24 tutorials, normally two per week (*Semester 2*).

**Description:** This subject explores how society comprehends, evaluates and uses information technology, computer science, internet resources, copyright and other pertinent technologies in the modern workplace. How do we distinguish between fact, fiction and fraud in digital information environments? How do we do it in the paper world? These are the fundamental questions addressed in this subject. Students should complete the subject with a grounding in basic research skills in both traditional and digital sources; with an understanding of issues relating to the use of electronic information systems; with an ability to evaluate evidence in digital objects; and have undertaken the construction and maintenance of digital records.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available.

### 136-260 God and the Natural Sciences

**Note:** Students who have completed 136-360 God and the Natural Sciences (Science 3) are not eligible to enrol in this subject.

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Prerequisites:** Normally 12.5 points of first year history and philosophy of science

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two lectures per week (*Semester 2*).

**Description:** This subject studies the complex relationship between religion, theology, and the natural sciences. Theological concerns guided the science of Kepler, Newton and many other early scientists. They held that studying the Universe demonstrated the attributes of God. After Darwin, this view was replaced by radically different ones: to some science and religion are necessarily antagonistic, to others they belong to different realms. We examine this change, the reasoning (good and bad) behind it and its residues, including some modern debates: 'Anthropic Principle', Multiple Universes, and scientific/philosophical issues such as 'Why is there something rather than nothing?' Finally, we explore the relationship between the 'personal God' of religious experience and the 'philosophers' God' posited to explain facts about the natural world.

**Assessment:** Written work totalling 4000 words.

**Prescribed texts:** A subject reader will be available. Other books will be required.

### 136-077 Psychoanalysis and Social Theory

See full subject details on page 2.

### 161-115 Introduction to Formal Logic

See full subject details on page 3.

## Third year subjects

### 136-052 Science as Practice and Culture

**Note:** Formerly available as 136-321. Students who completed 136-321 prior to 1999 are not eligible to enrol in this subject.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Helen Verran

**Prerequisites:** At least two second year HPS subjects.

**Contact:** A 2.5-hour lecture/seminar per week (*Semester 1*).

**Description:** The focus of this subject is the many and heterogeneous standardisations which feature in the workings of laboratories. We consider the nature, the functions and consequences of standardising in scientific work in both the practical and theoretical arena. The content is delivered through supporting students in carrying out a research project where they undertake participant observation in a laboratory. Part of the task is finding a laboratory to research and negotiating the study. In the study students will be expected to observe how people in the laboratory spend their time, to interview scientists and others, and to study the archives of the laboratory. The assessment of the subject is tied directly to this research study.

**Assessment:** Written work totalling 4000 words comprising two class papers of 500 words, and a research essay of 3000 words.

### 136-054 Controversies in Philosophy of Science

**Note:** Formerly available as 136-340. Students who completed 136-340 prior to 1999 are not eligible to enrol in this subject.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually two second year HPS subjects, including some philosophy of science.

**Contact:** A 2.5-hour lecture/seminar per week (*Semester 1*).

**Description:** This subject involves a selection of advanced topics of current interest in the philosophy of science. The content of this subject may vary from year to year. Specific topics dealt with may include such issues as the following: the nature and justification of scientific methodology and scientific reasoning; philosophical and psychological aspects of scientific evidence and explanation; causation and laws of nature in the natural sciences.

**Assessment:** Written work totalling 4000 words.

**136-055 Approaches to the History of Science**

**Note:** Formerly available as 136-341. Students who gained credit for 136-341 prior to 1999 are not eligible to enrol in this subject.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Prof R Home

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** A 2.5-hour discussion class per week (*Semester 2*).

**Description:** What is the history of science the history of? Different historians of science have answered this question in very different ways and have, as a result, presented diverse understandings of the historical roots of modern science and hence the nature of science itself. In this subject we analyse several 'classical' and more recent approaches to the science of the past, with the aim of becoming familiar with the main points at issue and developing a critical appreciation of current methodological debates. On completion of this subject students should understand the differences between various approaches to the history of science and understand the varying motives which encourage historians to see their subject from different perspectives.

**Assessment:** Written work totalling 4000 words. Students must attend a minimum of 75% of classes.

**136-329 Darwinism (Science 3)**

**Note:** Formerly available as 136-102/029. Students who have completed 136-102 or 136-029 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-102 before 1999 or 136-029 after 1998. Only available at science third year; for other levels, see 136-029 Darwinism (*p.2*). This subject is based on 136-029 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Ross Jones

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 2*).

**Description:** This subject involves an exploration of the work of Charles Darwin and other theories of evolution in the 19th and 20th centuries. The social and scientific background of evolutionary theories in Great Britain, Germany, the United States and Australia will be compared. The relations between biological claims and social theories will be examined through topics such as social Darwinism, racial science, evolution of sex and gender, behaviourism, evolution of the mind, eugenics, sociobiology, environmentalism, and science and religion. The popular understanding of Darwinism through literature and films will also be explored. This subject should be of interest to any students who wish to learn more about the origins of the life sciences.

**Assessment:** Written work totalling 5000 words and an in-class test of 1000 words.

**Prescribed texts:** A Desmond and J Moore, *Darwin*, 1992. • P Appleman, *Darwin: Texts, Backgrounds, Contemporary Opinion, Critical Essays*, 1979.

**136-333 Science, Reason and Reality (Science 3)**

**Note:** Formerly taught as 136-202/302/317. Students who have completed 136-202/302/317 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-033. Only available at science third year; for other levels see 136-033 Science, Reason and Reality (*p.3*). This subject is based on 136-033 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject addresses some of the central issues in the philosophy of science. It will raise questions: What is the difference between science and non-science? Is there a universal scientific method? Or do the methods employed by scientists vary historically? Is scientific theory change a rational process? Is science objective? Do scientific theories inform us of the truth about the world? Students who take this class will have knowledge of the major themes of recent and contemporary philosophical thinking about science. They will also have experience of the methods of critical analysis and argument employed in the philosophy of science and a background on which to base further study in the area.

**Assessment:** Written work totalling 6000 words.

**Prescribed texts:** A Chalmers, *What is This Thing Called Science?*. • M Curd & J A Cover, *Philosophy of Science: The Central Issues*. • I Hacking, *Representing and Intervening*.

**136-334 Science, Life and Mind (Science 3)**

**Note:** Formerly taught as 136-203/303/308. Students who have completed 136-203/303/308 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-203/303 before 1999 or 136-034 after 1998. Only available at science third year; for other levels see 136-034 Science, Life and Mind (*p.3*). This subject is based on 136-034 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** Science depends on people being able to rationally investigate reality. Recent advances in cognitive psychology and evolutionary theory enable us to better understand how human rationality is possible and thus how science is possible. This subject deals with such historical and philosophical questions as How do scientists determine the standard for good reasoning? What are those standards? How accurate are their judgements? On successful completion of this subject students should be familiar with the major philosophical theories of rationality; with the psychological, sociological and biological evidence regarding human rationality and irrationality; and have developed a better understanding of the relationships between the philosophical, biological, and psychological positions

**Assessment:** Written work which may comprise class papers and essays totalling 6000 words.

**136-337 Biotechnology in Modern Society (Sci.3)**

**Note:** Formerly available as 136-332. Students who have completed 136-332 (Biology in Modern Society or Biotechnology in Modern Society) are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-222/322 before 1999 or 136-037 after 1998. Only available at science third year; for other levels, see 136-037 Issues in the Modern Life Sciences (*p.3*). This subject is intended for students who are majoring in biological science. This subject is based on 136-037 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Rosemary Robins

**Prerequisites:** Usually two second year HPS subjects and 600-141 Biology of Cells and Organisms (*p.1*) and 600-142 Genetics & The Evolution of Life (*p.1*). Alternatively, Biology 141 and 142 and two second year zoology, botany, genetics, microbiology or biochemistry subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This subject will introduce students to selected research and commercial applications of modern biotechnology in order to discuss the broader issues that arise from them. A range of topics will be covered in this subject, which may include the recombinant DNA debate, biotechnology in agriculture, genetically modified food, pharmaceutical production, cloning, the human genome project, genetic testing and gene therapy. Students will consider some of the social, ethical, risk, and regulatory issues that arise from these applications of modern biotechnology and will examine some of the debates about these issues that have taken place in the wider community.

**Assessment:** Written work totalling 5000 words and an in-class test of 1000 words.

**Prescribed texts:** A subject reader will be available.

**136-338 The Scientific Revolution (Science 3)**

**Note:** Only available at science third year; for other levels see 136-038 The Scientific Revolution (*p.3*). Students cannot gain credit for both this subject and 136-224/324 before 1998 or 136-038 after 1998. This subject is based on 136-038 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Keith Hutchison

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 1*).

**Description:** This unit surveys a constellation of important changes in the thinking of educated people in 17th century Europe - a group of changes commonly referred to as 'The Scientific Revolution'. Students examine the official philosophy of the middle ages, scholasticism, and its notion that material objects were innately active; the appeal of alternative 17th century views of the matter as utterly passive; Descartes' mechanical philosophy; the Newto-

nian retreat from extreme mechanism; the impact of sceptical attacks on the reliability of human reason; the acceptance of a science that was self-confessedly tentative and hypothetical. Throughout the unit, the complexity of the processes governing the acceptance of a philosophy of nature is emphasised; and our discussion is placed into its broader contexts with religious and political connections repeatedly perused. Students who successfully complete this subject will be capable of displaying an improved understanding of the above issues.

**Assessment:** As for 136-038, and a 2000 word project on an advanced topic related to the subject but not covered in classroom teaching.

**Prescribed texts:** A subject reader will be available.

Descartes, D Cress (trans), *Meditations on First Philosophy*, Hackett. • J Henry, *The Scientific Revolution and the Origins of Modern Science*, Macmillan..

### 136-340 Science Technology & Society (Science 3)

**Note:** Only available at science third year; for all other levels see 136-040 Science Technology and Society (p.4). Students cannot gain credit for this subject and 136-226/326 before 1999 or 136/040 after 1999. This subject is based on 136-040 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Helen Verran

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Two 1-hour lectures and a 1-hour tutorial per week (*Semester 2*).

**Description:** This subject examines the theoretical/conceptual frameworks within which science, technology and society can be analysed as mutually constitutive. Students proceed through a series of case studies: How can we understand the process of building Gothic cathedrals?; examining the constitution of nature in TV wildlife documentaries; considering how Robert Boyle's airpump intervened in Restoration England; asking how zoos and science museums give us stories to live by. The case studies will be developed using video materials and site visits. Students who complete this subject should develop an understanding of, and an ability to think critically about, the ways technologies and scientific knowledge claims are influenced by social, cultural and historical contexts.

**Assessment:** Written work totalling 6000 words.

**Prescribed texts:** A subject reader will be available.

### 136-342 Science in Australia (Science 3)

**Note:** Students cannot receive credit for both this subject and 136-227/327 before 1999 or 136-042 after 1998. Only available at science third year; for all other levels see 136-042 Science in Australian Society (p.4). This subject is based on 136-042 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Prof R Home

**Prerequisites:** Usually two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two per week (*Semester 2*).

**Description:** This subject will analyse key themes in the development of science in Australia since 1788, setting Australian work in the context of the scientific ideas generally held at the time and examining the conceptual, social and institutional factors that shaped local developments. Current debates about the establishment of science in other emergent countries as well as Australia will provide a comparative context. On completion of the subject students should be familiar with the main lines of development of science in Australia since 1788, with the social and institutional factors that have shaped its development, and be able to critically assess relevant historical source material.

**Assessment:** Written work totalling 4000 words, and a 2000 word project on an advanced topic related to the subject but not covered in classroom teaching.

**Prescribed texts:** Materials will be available from the department.

### 136-360 God and the Natural Sciences (Science 3)

**Note:** Only available at science third year; for other levels, see 136-260, God and the Natural Sciences. Students who have completed 136-260 are not eligible to enrol in this subject.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Prerequisites:** Normally two second year HPS subjects.

**Contact:** Between 10 and 12 weekly tutorials and between 20 and 24 lectures, normally two lectures per week (*Semester 2*).

**Description:** This subject studies the complex relationship between religion, theology, and the natural sciences. Theological concerns guided the science of Kepler, Newton and many other early scientists. They held that studying the universe demonstrated the attributes of God. After Darwin, this view was replaced by radically different ones. To some people, science and religion are necessarily antagonistic. To others, they belong to different realms. We scrutinise the reasoning (good and bad) behind this change and pursue some of the modern debates it has created: 'the Anthropic Principle', multiple universes, and scientific/philosophical issues such as 'Why is there something rather than nothing?' Finally, we explore the relationship between the 'personal God' of religious experience and the more abstract 'philosophers' God.'

**Assessment:** Written work totalling 6000 words. As for 136-260, plus an additional 2000 word project on an advanced topic related to the subject but not covered in classroom teaching.

**Prescribed texts:** A subject reader will be available. Other books will be required.

## Third/fourth year subjects

### 136-442 Directed Study

**Note:** Formerly available as 136-342 and 136-062. Students who have completed 136-342 or 136-062 are not eligible to enrol in this subject.

**Availability:** 3rd and 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually two second or third year HPS subjects. Students must obtain permission to undertake this subject, prior to enrolling, through a member of the department who is willing to supervise the course of study.

**Contact:** By arrangement with the supervisor. Students should expect to devote at least 80 hours to this subject during the course of the semester (*Semester 1, repeat 2*).

**Description:** The content of this subject is dependent on the interests and expertise of the student. This subject functions to provide students with the opportunity to do supervised research on a topic not normally treated in the undergraduate curriculum. The student should gain skills in independent research and acquire the ability to apply historical, philosophical and social forms of analysis to a piece of scientific work of particular personal and intellectual interest.

**Assessment:** Written work totalling 4000 words for third year, 5000 words for fourth year.

## Fourth year subjects

### 136-501 HPS Thesis

**Availability:** 4th year

**Credit points:** 50

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Contact:** Regular supervision. Students will be expected to participate regularly in a methodology seminar intended to assist them in the development of the thesis (*Year long*).

**Description:** A supervised research project of 15 000 words in length.

**Assessment:** A thesis of 15 000 words.

### 136-520 HPS Thesis (MYE)

**Availability:** 4th year

**Credit points:** 50

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Contact:** Regular supervision. Students will be expected to participate regularly in a methodology seminar intended to assist them in the development of the thesis (*Semester 1, repeat 2*).

**Description:** A supervised research project of 15 000 words.

**Assessment:** A thesis of 15 000 words.

### 136-416 Beyond Realism and Relativism

**Note:** Formerly available as 136-416 and 136-064. Students who have completed 136-416 or 136-064 are not eligible to enrol in this subject. This subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Neil Thomason

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 2*).

**Description:** This subject will introduce students to key themes in contemporary debate in the philosophy of science, emerging from the opposition between scientific realism and epistemological relativism. Particular attention will be devoted to the recent emergence of neo-pragmatist positions in the philosophy of science.

**Assessment:** Written work totalling 5000 words.

### 136-417 Science in the Classical World

**Note:** Formerly available as 136-417 and 136-065. Students who have completed 136-417 or 136-065 are not eligible to enrol in this subject. This subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Keith Hutchison

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 1*).

**Description:** In this subject selected issues, deemed central to the history of science and philosophy in the ancient Greek (and Roman) world, are studied at a moderately advanced level, via discussion of various primary and secondary texts. Though the exact content of the unit is to vary from year to year, typical topics might be the contrast between pre-socratic philosophy and its predecessors; early notions of mathematical proof; Plato's hostility to empiricism; Aristotle's account of matter; and Euclid and the axiomatic method. Students who successfully complete this subject will be capable of displaying an improved understanding of the above issues.

**Assessment:** Written work totalling 4000 words, and a 1-hour class test.

### 136-418 Risk, Environment and Modernity

**Note:** Formerly available as 136-418 and 136-066. Students who have completed 136-418 or 136-066 are not eligible to enrol in this subject. This subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Rosemary Robins

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 1*).

**Description:** This subject will critically examine recent sociological approaches to risk in relation to science, technology, the environment, human health and modernity. Sociological approaches to risk will be discussed in relation to case studies in which the assessment and management of risk is central. Case studies will be based on specific environmental disputes, public health issues or new technological developments, and will explore the perception of risk held by different stakeholder groups, the role of scientific and technical expertise in risk assessment and the public understanding of science, technology and risk. Students should complete the subject with a knowledge of current social theories of risk and modernity and the debates these have generated within social theory and science and technology studies.

**Assessment:** Written work totalling 5000 words.

**Prescribed texts:** A subject reader will be available.

### 136-419 Ecology and the Environmental Movement

**Note:** Formerly available as 136-419 and 136-067. Students who have completed 136-419 or 136-067 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Dr Helen Verran

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 1*).

**Description:** This subject examines the history of ecology during the last century - a period of unprecedented transformation in both the environment and the sciences created to interpret these changes. Students will explore the instrumental ecological ideas of geography, natural history, plant succession, ecosystem ecology, the Gaia hypothesis, and chaos ecology. In the field of environmental thought, students will examine conservation, green politics, deep ecology, ecofeminism, environmental racism and justice, and bioethics. Specific case studies will focus on ecological investigations of human systems including nuclear fallout, introduced species and pests, deforestation, and overpopulation. The sources will range from ecological papers and field studies to popular films, books and articles on environmental thought. This subject should be of interest to students wishing to learn more about the historically complex relationship between the world we inhabit and the ways in which we understand our world.

**Assessment:** Written work totalling 5000 words.

**Prescribed texts:** D Worster, *Nature's Economy: A History of Ecological Ideas*, 1995. • W Cronon (ed), *Uncommon Ground: Rethinking the Human Place in Nature*, 1996.

### 136-461 Special Lecture Program

**Note:** Formerly available as 136-635, 136-509, 136-347 and 136-047. Students who have completed 136-635, 136-509, 136-347 or 136-047 are not eligible to enrol in this subject. This subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 1, repeat 2*).

**Description:** Selected topics in the history and philosophy of science.

**Assessment:** Written work totalling 5000 words.

### 136-451 Disease and Culture

**Note:** Formerly available as 136-451 and 136-069. Students who have completed 136-451 or 136-069 are not eligible to enrol in this subject. The subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Coordinator:** Assoc Prof J McCalman & Dr S Nelson

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Contact:** A 2-hour seminar per week (*Semester 2*).

**Description:** This subject is an overview of the historical study of disease and biomedicine with special reference to public health in comparative, cross-cultural settings. It builds on recent work in the history of biomedical sciences, the sociology of illness, cultural studies and social theory to reframe the history of public health. Students should develop an understanding of the cultural framing of disease in western and non-western societies; demonstrate the ability to analyse critically a range of biomedical and public health interventions; and gain experience in carrying out a research project in the history of health care, biomedical sciences and public health.

**Assessment:** Written work totalling 5000 words.

### 136-496 HPS Research Project (Science)

**Note:** Formerly available as 136-496 and 136-070. Students who have completed 136-496 or 136-070 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 50

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS.

**Contact:** Students will be expected to participate regularly in a methodology seminar intended to assist them in the development of the thesis (*Year long*).

**Description:** A supervised research project of 15 000 words in length.

**Assessment:** A thesis of 15 000 words.

### 136-497 HPS Advanced Coursework (Science)

**Note:** Formerly available as 136-497 and 136-071. Students who have completed 136-497 or 136-071 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 25

**HECS-band:** 1

**Coordinator:** Assoc Prof Howard Sankey

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS.

**Semester:** Year long

**Description:** This subject comprises four single-semester seminars chosen from the HPS Department fourth year and postgraduate level subjects and approved by the supervisor. Where a fourth year or postgraduate subject offered by a cognate department is particularly relevant to a student's thesis, permission may be granted for enrolment in that subject.

**Assessment:** Written work totalling 5000 words in each of the four seminars.

## Subjects not offered in 2002

### Second/third year subjects not offered in 2002

#### 136-035 A History of Nature

**Note:** Formerly available as 136-215/315. Students who have completed 136-215 or 136-315 Historical Encounters in a Changing Environment are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-335 A History of Nature (Science 3) (*p.8*).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Semester:** Not Offered

**Description:** This subject traces the historical changes that occurred over the last 500 years, as Europeans spread out from the continent during the 15th century voyages of discovery, and discovered new frontiers that challenged their scientific and social beliefs. We will follow the changes in the environmental sciences that accompanied these voyages as they transformed notions of geography, natural history, evolutionary biology, geology and ecology. Case studies will include America, Australia, the colonial world, and developing nations. Environmental issues ranging from introduced species, sustainability, resource management, pollution, overpopulation, environmental engineering and virtual natures will also be examined. The historical questions that will frame our journey will include issues of local versus Western knowledge, fieldwork versus laboratory work, environment and race, and control over the environment. This subject should be of interest to students who would like to learn more about the origins of the environmental sciences and our on-going attempts to live within a changing environment.

#### 136-036 Philosophy of Science

**Note:** Formerly available as 136-220/320. Students who have completed 136-220 or 136-320 Philosophy of Science are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-336 Philosophy of Science (Science 3) (*p.8*).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Semester:** Not Offered

**Description:** This subject explores the history and logic of major scientific theories such as Newtonian mechanics or evolution. It will critically evaluate scientists' and others' philosophical accounts of how science should be done, as well as scientists' actual behaviour. Specific content may vary from year to year. Students should contact the department to ascertain the precise subject matter. Students should also acquire an understanding of how methods and theories in the sciences have changed over the centuries and gain a background in the philosophy and history of science on which to base further study in the area.

#### 136-041 Science and Other Traditions

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Semester:** Not Offered

**Description:** This subject is a study of the ways the sciences might work with other traditions. The sciences often operate in situations where the local knowledge traditions of communities need to be recognised and respected. Yet local knowledge is usually embodied in practices and only mobilised with difficulty. This can make things difficult for marine biologists who work with indigenous communities on turtle biology; for computer scientists who work with farmers struggling with land degradation; for geomatics personnel who work with property rights secured through indigenous land tenure; for taxonomists surveying rainforest plots with the help of villagers who own the plot; for a mathematics teacher struggling to appreciate the understandings of his/her non-Western students. This subject gives students the opportunity to become acquainted with the major analytic questions which inform social inquiry into the nature of scientific practice.

#### 136-043 Modern Scientific Controversy

**Note:** Formerly available as 136-229/329. Students who have completed 136-229 or 136-329 Upheavals in Scientific Thought are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-343 Scientific Controversy (Science 3) (*p.9*).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Semester:** Not Offered

**Description:** This subject deals with the historical, philosophical and sociological aspects of scientific controversies. Case studies to be examined include the 'modern revolution' in the earth sciences and the on-going controversy about the 'death of the dinosaurs'. Students completing this subject should develop detailed knowledge of both philosophical and sociological frameworks for the analysis of cumulative and revolutionary change in science; practice in applying these frameworks to historical and contemporary instances of scientific change; skills in the critical analysis of scientific publications; and improved written and oral communication skills.

#### 136-044 Current Issues in Philosophy of Science

**Note:** Formerly available as 136-238/338. Students who have completed 136-238 or 136-338 Current Issues in the History and Philosophy of Science are not eligible to enrol in this subject. Available at second and third year, except in science (second year only). For science third year, see 136-344 Current Issues in Phil of Science (Sci3) (*p.9*).

**Availability:** 2nd and 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually 75 points of first year study across any discipline areas.

**Semester:** Not Offered

**Description:** This subject deals with current research in the history and/or philosophy of science. Its subject matter can range from philosophical critiques of evolutionary theory to medical history to the role of science in debates about the environment. In 2001, this subject will focus on the ideas of the natural, naturalism and naturalisation, as they occur in current philosophical thinking about science.

#### 136-076 Social Theory and Political Analysis

See full subject details on page 3.

### Third year subjects not offered in 2002

#### 136-335 A History of Nature (Science 3)

**Note:** Students cannot gain credit for both this subject and 136-215/315 before 1999 or 136-035 after 1998. Only available at science third year; for all other levels see 136-035 A History of Nature (*p.8*). This subject is based on 136-035 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually two second year HPS subjects.

**Semester:** Not Offered

**Description:** This subject traces the historical changes that occurred over the last 500 years, as Europeans spread out from the continent during the 15th century voyages of discovery and discovered new frontiers that challenged their scientific and social beliefs. We will follow the changes in the environmental sciences that accompanied these voyages as they transformed notions of geography, natural history, evolutionary biology, geology and ecology. Case studies will include America, Australia, the colonial world, and developing nations. Environmental issues ranging from introduced species, sustainability, resource management, pollution, overpopulation, environmental engineering and virtual natures will also be examined. The historical questions that will frame our journey will include issues of local versus Western knowledge, field work versus laboratory work, environment and race, and control over the environment. This subject should be of interest to students who would like to learn more about the origins of the environmental sciences and our ongoing attempts to live within a changing environment.

#### 136-336 Philosophy of Science (Science 3)

**Note:** Formerly available as 136-220/307/320. Students who have completed 136-220/307/320 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-220/320 before 1999 or 136-036 after 1998. Only available at science third year; for other levels, see 136-036 Philosophy of Science (*p.8*). This subject is based on 136-036 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually two second year HPS subjects.

**Semester:** Not Offered

**Description:** This subject explores the history and logic of major scientific theories such as Newtonian mechanics or evolution. It will critically evaluate

scientists' and others' philosophical accounts of how science should be done, as well as scientists' actual behaviour. Specific content may vary from year to year. Students should contact the department to ascertain the precise subject matter. Students completing this subject should acquire an understanding of how methods and theories in the sciences have changed over the centuries and gain a background in the philosophy and history of science on which to base further study in the area.

### 136-343 Scientific Controversy (Science 3)

**Note:** Formerly available as 136-305. Students who have completed 136-305 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-229/329 before 1999 or 136-043 after 1998. Only available at science third year; for all other levels, see 136-043 Modern Scientific Controversy (*p.8*). This subject is based on 136-043 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually two second year HPS subjects.

**Semester:** Not Offered

**Description:** This subject involves the study of historical, philosophical and sociological aspects of scientific controversies. Case studies to be examined include the 'modern revolution' in the earth sciences and the on-going controversy about the 'death of the dinosaurs'. Students completing this subject should develop detailed knowledge of both philosophical and sociological frameworks for the analysis of cumulative and revolutionary change in science; practice in applying these frameworks to historical and contemporary instances of scientific change; skills in the critical analysis of scientific publications; and improved written and oral communication skills.

### 136-344 Current Issues in Phil of Science (Sci3)

**Note:** Formerly available as 136-318. Students who have completed 136-318 are not eligible to enrol in this subject. Students cannot gain credit for both this subject and 136-238/338 before 1999 or 136-044 after 1998. Only available at science third year; for other levels, see 136-044 Current Issues in Philosophy of Science (*p.8*). This subject is based on 136-044 but involves additional work.

**Availability:** 3rd year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually two second year HPS subjects.

**Semester:** Not Offered

**Description:** This subject deals with current research in the history and/or philosophy of science. Its subject matter can range from philosophical critiques of evolutionary theory to medical history to the role of science in debates about the environment. In 2001 this subject will focus on the ideas of the natural, naturalism and naturalisation, as they occur in current philosophical thinking about science.

### Fourth year subjects not offered in 2002

#### 136-460 Physical Science in the 18th Century

**Note:** Formerly available as 136-508, 136-634, 136-346 and 136-046. Students who have completed 136-508, 136-634, 136-346 or 136-046 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** This subject involves a close historical study of topics such as the changing content and place of physics in the university curriculum during the course of the 18th century; the emergence of experimental natural philosophy; science and the Enlightenment; the growth and mathematisation of various fields of experimental inquiry (especially electricity, magnetism, heat and optics); and specialisation and the development of new institutional forms. Students should complete the subject familiar with the development of the discipline of physics between 1700 and the early 19th century.

#### 136-462 Realism, Relativism and Naturalism

**Note:** Formerly available as 136-510, 136-638, 136-348 and 136-048. Students who have completed 136-510, 136-638, 136-348 or 136-048 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** In this subject students will examine the current trend toward naturalistic approaches to methodological, epistemological and metaphysical issues in modern philosophy of science. Much recent philosophy of science has been characterised by an opposition between realist advocates of the objectivity of science and a variety of cognitive relativist positions which deny such objectivity. However a separate, naturalistic tendency in the philosophy of science promises to transcend the opposition between realism and relativism. On completion of this subject students should have a grasp of the history of and differences between realist and relativist approaches to the philosophy of science and should understand the implications of the naturalistic approach.

#### 136-463 Genetics in Society

**Note:** Formerly available as 136-511, 136-640, 136-349 and 136-049. Students who have completed 136-511, 136-640, 136-349 or 136-049 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma, fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** This subject will examine genetics in society. Theoretical approaches drawn from the sociology of science and technology will be discussed and case studies of the application of genetics in today's society will be examined. These may include the human genome project, genetic screening, gene therapy, and DNA profiling. Students undertaking this subject should acquire a greater understanding of the complex relationship between genetics and society and explore ways of analysing how the new genetics shapes our understanding of human health, reproduction and the environment.

#### 136-464 Philosophical Problems in Statistics

**Note:** Formerly available as 136-648, 136-512, 136-495 and 136-050. Students who have completed 136-648, 136-512, 136-495 or 136-050 are not eligible to enrol in this subject. This subject may be cancelled unless enrolments reach five.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** This subject will examine the claim that statistics used in the social sciences are often seriously flawed. It will examine the history of 20th century statistics, with an emphasis on the Fisher/Neyman-Pearson debates and the attempts over the last 30 years to reform social science statistics. It will examine the claim that faulty statistics severely impede the growth of the social sciences. Finally, it will examine the claim that many outstanding philosophical questions about science can be answered by a sophisticated application of Bayes' theorem.

#### 136-465 Institutions of Australian Science

**Note:** Formerly available as 136-503, 136-621, 136-345 and 136-051. Students who have completed 136-503, 136-621, 136-345 or 136-051 are not eligible to enrol in this subject.

**Availability:** 4th year

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** This subject offers an in-depth study of selected key themes in the history of Australian science, using case studies to set scientific ideas and practices within a context of social and economic development. Issues discussed may include the tyranny of distance; colonial versus metropolitan science; the nature of scientific authority; science and development; science and the political order; and science in peace and war.

#### 136-466 Scepticism, Fallibilism and Relativism

**Note:** Formerly available as 136-449 and 136-068. Students who have completed 136-449 or 136-068 are not eligible to enrol in this subject.

**Credit points:** 12.5

**HECS-band:** 1

**Prerequisites:** Usually admission to the postgraduate diploma or fourth year honours in HPS, or a postgraduate coursework program.

**Semester:** Not Offered

**Description:** This subject involves an examination of foundational issues in the epistemology of science. Students who complete this subject should have a critical understanding of advanced topics in the theory of scientific knowledge; and be familiar with the current literature on epistemological relativism.

