

Full Course Listing

HPS1000H: Introduction to the History and Philosophy of Science and Technology (**pro-seminar: required for all students in their first term**) The course syllabus will change from year-to-year. The purpose of this course is to provide an overview of current issues in the History and Philosophy of Science and Technology. The History of Science and the Philosophy of Science often operate at a distant remove from one another. We have chosen to emphasize the integration between them. The course is divided into a series of contemporary issues, each of which is addressed by both historians and philosophers of science. Our objectives will be not just to understand each of these issues in its own domain, but to seek to find common ground between them. You will be asked to read the material in advance and come prepared each week to discuss it.

HPS1001H/1002H/1003H/1004H/1005Y: Individual Reading and Research in the History and/or Philosophy of Science and Technology.
Normally, 1 full or 2 half-courses allowed per program. Instructor's permission required. Topic is chosen by the student, with approval of a particular faculty member, who meets with the student regularly to discuss readings. Involves the writing of at least one essay. Can also be taken during the summer. Normally, 1 full or 2 half-courses allowed per program. Instructor's permission required.

HPS1500H+: Research Paper (available only to pre-2005 admitted students)

HPS1100Y: Advanced Research Paper (**required for all students**)
An extended research paper, the equivalent of a full-year course. It is an exercise in doing significant research, and may also serve to identify the student with a topic area and a supervisor. Ideally, an 1100 paper will be publishable with some minor revisions, and/or something that could be adopted to form part of the student's dissertation. It is taken in the second year of the PhD curriculum. However, students are encouraged to identify a topic in consultation with a professor as soon as possible in their time here, and no later than October 31 of their second post-BA/BSc year. Students are expected to have completed the paper by June 30th of that year. The precise deadline is to be negotiated with the supervisor.

HPS 2000H: Introduction to the History of Mathematics, Craig Fraser
Each session will be focused on one particular mathematician and one work that the mathematician wrote. We will devote one or two sessions to each topic, the first consisting of an overview of the relevant history of mathematics, and the second devoted to the particular subject under consideration. The subjects considered have led to historical discussion and even controversy, and in many cases have resulted in a novel historical interpretation of some part of past mathematics.

HPS 2001H: Introduction to the History of Physics, Chen-Pang Yeang
The aim of this graduate seminar is to introduce important developments in the history of physics and to explore the ways to understand them. In the semester, we will examine in chronological order the emergence or consolidation of some primary areas of physical sciences,

such as thermodynamics, electrodynamics, quantum mechanics, and relativity. Although these topics by no means exhaust all the noteworthy episodes, they nonetheless represent the major route along which physics has taken shape. In addition to its historical subject, each session corresponds to a historiographical theme, which can be philosophical, sociological, or cultural. We will discuss how historians have addressed these themes and turned them into approaches of writing the history of physics, and assess the implications of such approaches.

HPS 2003H: Introduction to of the History of Biology, Marga Vicedo

This course provides an overview of selected major developments in the history of the life sciences, mainly in evolution and genetics in the late 19th and 20th centuries. It also examines key historiographical questions in the history of science. Each week we focus on one historical event and also on one historiographical issue in the history of science, but we will strive to connect them. The readings include primary sources, secondary sources, and historiographical discussions. We learn to interpret primary texts and use secondary literature in developing historical arguments.

HPS 2004H: Introduction to the History of Medicine, Lucia Dacome

This course will examine the historical development of western medicine in relation to societies, politics and culture. We shall address topics such as changing views of the body and its functions, the social and cultural meaning of disease, the place of patients and medical practitioners in the world of healing and the role of religion and magic in this world. We will also explore the bearings medical pursuits had on the creation and substantiation of notions of gender, investigate how practitioners sought to gain and maintain authority over knowledge, institutions and patients, and examine the place of visual and material culture in the production and dissemination of medical knowledge. Although the course will focus on the so-called 'Western' medicine, we shall consider points of contact and encounters between Western and non-Western medical worlds.

HPS 2005H: Introduction to the History of Technology I, Staff

This course will examine aspects of the history of technology from Antiquity and the Middle Ages to the end of the seventeenth century. It is intended to introduce students to selected aspects of the subject, to serve as a background study for those who will specialize in other fields, and to prepare students who may wish to do additional work in the field. It focuses on themes and issues that extend across other historical periods and subject areas. It is not a research seminar, but instead what other universities call a pro-seminar, a preliminary approach to a subject.

HPS 2006H: Introduction to the History of Technology II, Chen-Pang Yeang

This seminar provides a highly selective overview of the history of modern technology from the time of the classical Industrial Revolution onwards. "Technology", like "Nature", is a complicated and ambiguous word. Moreover, its meaning seems to be getting muddier the more it is invoked as saviour, demon, the way to heaven, or the road to hell. History can help us understand the word and the thing a little better and we will attempt to do this in this course. Because of the breadth and the nature of the subject, the course cannot claim to be anything but introductory. Its intent is to provide you with an exposure to selected readings and issues in the history of modern

technology, the opportunity to think and write about these, present them to other seminar members, and benefit from their comments and criticisms. You will not have the opportunity to do serious research, but you will be required to explore beyond your readings and write on your findings.

HPS 2007H: Introduction to the History of Astronomy, Craig Fraser

A survey of selected topics in the history of astronomy. Proceeding chronologically, we survey major innovative achievements in astronomy, from the planetary tables of the Seleucid Babylonians to the big-bang model of contemporary cosmology. Attention will be paid to developments that have provoked historical debate and discussion, or have resulted in a novel historical interpretation of past astronomy. Particular emphasis will be placed on the development of cosmology: the shift from the Ptolemaic to Copernican astronomy in the Scientific Revolution, and the rise of big-bang cosmology in the twentieth century.

HPS 2008H: Introduction to the History of Psychology, Mark Solovey

This course examines the history of psychology from a number of angles. We will focus on major figures such as Wilhelm Wundt, Sigmund Freud, and B. F. Skinner. We will study the development of key controversies about scientific epistemology and methodology and about the social implications and public policy uses of psychological knowledge. We will consider how psychology was first established as an academic discipline, became institutionalized, grew as a profession, and came to be the large, diverse field of scientific inquiry and practical application that it is today. We will examine the social context and specific influences (i.e., politics, war, social structure, patronage, academic environment, influential personalities, etc.) that have shaped the development of psychology and its relationships with the wider society. We will consider how the history of psychology can be relevant to the theory and practice of contemporary psychology. We will reflect on the contributions of the history of psychology to history of science more broadly and vice versa.

HPS 2009H: Introduction to the History and Philosophy of the Social Sciences, Mark Solovey

In this course we examine the history and philosophy of the social sciences from the seventeenth to the twentieth centuries. We will explore the importance of major figures, such as David Hume, Adam Smith, John Stuart Mill, Karl Marx, Franz Boas, Robert and Helen

Lynd, George Gallup, Karl Mannheim, Robert Merton, Alfred Kinsey, Talcott Parsons, Walt Rostow, Jurgen Habermas, and others. We will study the development of key controversies about social science methodology, the relationship between the individual and society,

the meaning of race, class and other social groupings, the causes of historical change, the prospects for social progress, and the social relevance and uses of social science

knowledge. We will consider how the social sciences were established as academic disciplines, became

institutionalized, and grew into modern professions. We will examine the social context and specific influences (i.e., politics, war, social structure, patronage, academic environment, influential personalities, etc.) that have shaped the development of the social sciences and their relationships with the wider society. We will also consider the relations of the social sciences to the natural sciences in historical and philosophical perspectives.

HPS 3000H: Introduction to the Philosophy of Science, Brian Baigrie

This course is designed as a graduate level introduction to philosophy of science. The lectures and discussions will explore some important issues in the philosophical literature on the natural sciences: rationality, experimental practice, theory, the role of instruments, the unity/disunity of the sciences, problem-solving in the sciences, Incommensurability, and the

underdetermination thesis, to name just a few. Wherever possible, we will attempt to situate these issues in their historical context, and to relate their emergence to associated intellectual approaches (e.g., feminist, anthropological, sociological trends). In order to facilitate discussion, however, we will chiefly be concerned with the treatment that these issues have been given by a handful of scholars (esp. Kuhn, van Fraassen, Hacking, Latour, Rouse) who have contributed greatly to the present shape of philosophy of science and the considerable influence that it enjoys in many academic circles.

HPS 3001H: Introduction to the Philosophy of Biology, Paul Thompson

This course is an overview of current issues within the Philosophy of Biology. The course subject

matter is somewhat arbitrarily divided into three categories: (i) those issues arising from the fact that evolution is manifest as a population-level phenomenon. (ii) those issues arising from the fact that evolution is a consequence of the activities of organisms, and (iii) those issues arising from the fact that they don't fit in either category (i) or (ii).

History of Science Courses (Enrolment in HPS4000-series courses by history-stream students requires that two HPS2000 series courses and one HPS3000 series course have been taken or are concurrently being taken. On the recommendation of the student's faculty advisor, the Director of Graduate Studies may waive some or all of this requirement)

HPS 4000H: Historical Introduction to the Sociology of Scientific Knowledge, Staff

HPS 4001H: The Scientific Revolution: Galileo to Newton, Brian Baigrie

This course deals with the rise of the new science of dynamics that culminated in Newton's

Principia. The focus will be astronomy and physics, but some developments in mathematics and philosophy will be considered as well. Familiarity with Medieval and Renaissance science is recommended but not required.

HPS 4002H: History of Systematics, Staff

The study of biological diversity includes comparative morphology, paleontology, and biogeography, but its principle tool is taxonomy. The first half of this course, which may be taken as a half-course, will examine classical figures such as Aristotle, Ray, Linnaeus, Buffon, Cuvier, Agassiz, and Darwin. Students who enroll in the full course will pursue original research in the second term, exchanging progress reports and final papers.

HPS 4003H: History of Evolutionary Biology, Marga Vicedo

Content, background, and consequences of Darwin's theory of evolution. Readings will include close study of the Origin of Species. Topics for the Fall seminars, depending on participants' interests, could include Darwin's personality and scientific style; impact of Lyell's geology; ideas of population held by Malthus and others; pre-Darwinian thinking on species variation and classification; 19th century ideas about development and progress; views of Lamarck, Herbert Spencer, William Bateson, and August Weismann; the "modern synthesis" of the 1940's. The spring term of the full course version consists of a research paper.

HPS 4004H: The Intellectual Context of Nineteenth-Century Science, Staff

Approximately twelve weeks are spent concentrating on selected issues, mostly through primary material (chosen from: science and religion, romanticism, and methodology, scientific education and organization), followed in the full course version (Y) by research and discussion. Emphasis on Victorian Britain, with a possible look at France, Germany.

HPS 4005H: History of Physiology, Staff

The course will trace a history of physiology from the classical foundations to the twentieth century. I shall try to introduce the more recent historiography, which has been based in large part on a feminist approach. We can include some of the new work on the history of the body as lived in: physiology as experienced from inside the body as well as outside, in the life science mode. I feel that this style offers a new lead, especially, perhaps, for the physiology of gender, and even where we are not concerned with women or with reproduction.

HPS 4006H: History of Immunology, Staff

This course covers the development of immunology between 1870 and the present, including the problem of species in bacteriology, immunology and immuno-chemistry, and the problem of antibody diversity, from Haurowitz's template theory to Macfarlane Burnet's clonal selection theory. Special attention will be given to AIDS and its significance. Wherever possible, cultural, institutional and practical factors will be considered along with immunological theory and research patterns.

HPS 4007H: Body, Medicine, and Society in Early Modern Europe, Lucia Dacome

The medical understanding of the human body is related to how societies view life and

health. This course will investigate early modern medical approaches to the body in their social and cultural contexts, and explore the relationship between medical knowledge and bodily knowledge. On the one hand, we will analyze how the body was represented in social, cultural, political and religious contexts. On the other, we will investigate how medical knowledge and practice both reflected and shaped beliefs, knowledge and values about the human body. The historical time period covered will be mainly 1400-1800. Readings will be in English and French.

HPS 4008H: Chemistry from Lavoisier to Mendeleev, Staff

The medical understanding of the human body is related to how societies view life and health. This course will investigate early modern medical approaches to the body in their social and cultural contexts, and explore the relationship between medical knowledge and bodily knowledge. On the one hand, we will analyze how the body was represented in social, cultural, political and religious contexts. On the other, we will investigate how medical knowledge and practice both reflected and shaped beliefs, knowledge and values about the human body. The historical time period covered will be mainly 1400-1800. Readings will be in English and French.

HPS 4009H: The Invention of Modern Biology, Staff

This is an exploratory seminar, testing the connections between the content of biology from

about 1850 to 1950 and the institutional and social structure of biology as a discipline.

Although natural history and various branches of medicine were well established in the 18th century and before, most of the fields now central to biology, like cytology, evolution, and genetics, took shape only after 1850. It was also after 1850 that biologists became professionalized. Through university laboratories and marine stations, governments and private donors accepted the claim that knowledge of life promised social as well as medical benefits. The spring term of the full course version consists of a research paper.

HPS 4010H: Newton and Mechanics, Staff

A concentrated reading of Books I (H), II and III (Y) of Newton's Principia Mathematica, together with relevant contemporary material, including Huygens on the pendulum and colliding bodies, and Descartes' rules of motion.

HPS 4011H: History of Engineering, Janis Langins

This seminar will explore the history of engineering from the earliest times to the present. As a first approximation, engineering is defined as that sub-set of technological activities that involves the conception, coordination, and ongoing management of relatively large-scale technical projects. The particular emphasis of the seminar will vary from year to year, including the social history of engineering, engineering education and selected engineering applications, such as public works or fortification.

HPS 4012H: Science in Canadian History, Staff

Science in Canada and its social cultural context, with emphasis on the 19th century. Topics will include the geological and magnetic surveys, the role of local societies, science and exploration, and the development of scientific education.

HPS 4014H: The Biology of Death: Experimental Biology and Experimental Medicine, 1860– 1940, Nikolai Kremmentsov

This research seminar is focused on the interactions between experimental medicine and experimental biology in Canada, France, German, Great Britain, Russia and the United States during the period 1860-1940. Through the reading of primary and secondary sources (including science fiction), it will explore the interplay of ideas, institutions, and practices of experiment biology and experimental medicine with contemporary political, ideological, cultural, and social developments. It will analyze the emergence of such experimental technique as organ and tissue transplants, reanimation, the perfusion of isolated organs, tissue cultures, blood transfusions, and organotherapies. The seminar will examine how diverse biomedical fields, including pharmacology, endocrinology, histology, gerontology, human genetics, haematology, and immunology, were animated by the discussions of death and immortality.

HPS 4015H: Science in the Renaissance, Brian Baigrie

This course will examine the rise of science and the scientific disciplines in sixteenth-century Europe in relation to other intellectual and cultural trends. The focus will be astronomy and mechanics, but other trends will also be examined. Familiarity with medieval science and philosophy is recommended but not required.

HPS 4016H: Human Genetics and the Eugenics Movement, Staff

This seminar will deal with the history, technology and ideals of the international Eugenics Movement from 1860 to the present, including recent Canadian legal changes dealing with eugenic sterilisation cases. It will include primary source translations from French and German. The discussions will also explore current problems of human genetics and demography that had their roots in this movement.

HPS 4017H: The Rise of Eugenics: A Comparative History, Nikolai Kremmentsov

This research seminar is a study of the comparative history of the rise of eugenics in the English-speaking world during the period from the 1860s to the 1930s. Through a close reading of primary and secondary sources, we will explore the interplay of eugenic ideas, institutions, and practices with contemporary scientific, political, ideological, cultural, demographic, and social developments. We will examine how diverse fields, including criminology, medicine, demography, anthropology, genetics, and public health, were animated by discussions of eugenic problems and solutions.

HPS 4018H: The Emergence of Modern Mathematics in the Eighteenth and Nineteenth Centuries, Craig Fraser

The course will provide a survey of a selected topic in the history of mathematics 1770-1900. Examples of subjects that have been covered in the past include the development

of conceptual foundations of analysis, the history of mathematical mechanics, and the history of mathematical logic. Emphasis will be placed on the technical and conceptual development of mathematics, although philosophical and social influences on mathematical practice will also be considered.

HPS 4019H: Studies in Ancient and Medieval Science, Staff

Topics for this course change from year to year and are chosen from the scientific traditions of the ancient Near East, the classical world, and the Arabic, Byzantine, and Latin Middle Ages.

HPS 4020H: Medieval Technology and Society, Staff

This seminar surveys some of the recent monographic literature, mainly in English, concerned with the subject. Special attention is given to methodological problems involved in the attempt to relate technological and social change. Among the topics considered are transportation, nautical technology and exploration, mechanism (clockwork and automata), Islamic technology, printing and the Renaissance, and religion, technology and progress.

HPS 4021H: Technology and War: 1090–1918, Staff

This course considers several themes in the relationship between violent conflict and the technical means pertinent to it. Fundamental to this approach is the recognition that individual technical advances themselves have relatively minor influence on the course of events; rather, it is the ensemble of various technologies that tips the balance of power in one direction or another. Likewise, one-sided attention to the effects of technology on war must be supplemented by consideration of war's effects on technological change and development.

What has been called the "new military history" stresses this interplay of factors, and it is an approach, which is pursued in this seminar.

HPS 4100H: Historical Topics in Scientific Methodology, Brian Baigrie

This course will examine methodological practices in historical perspective. Topics will change from year to year, but may include: deductions from the phenomena, artifact construction and the mechanical sciences, laboratory life.

HPS 4101H: Topics in the History of Physics in the Eighteenth and Nineteenth Centuries, Chen-Pang Yeang

This course explores the transformation of physical science from Newton's Principia to the emergence of classical mechanics, embodied in Pierre Simon Laplace's Celestial Mechanics, in the nineteenth century. The focus is displaced from the scientific giant, Newton, to those after him. We will examine the major theoretical, empirical, and mathematical issues involved in this transformation, and the philosophical and pragmatic implications of these issues. We will also situate this transformation in the social, cultural, and political contexts of contemporary Europe, such as Enlightenment, civil society, the Industrial Revolution, and overseas exploration.

HPS 4103H: Topics in the History of Chemistry, 1600–1950, Staff

This course will focus each time on a specific set of problems and issues, e.g. the relation between apparatus and conceptual development; the development and changing identity of chemistry as a discipline; relations between chemistry and neighboring sciences; chemistry and its public. As a half course, the course will be a seminar with set readings and presentations; for those taking the course for a full year (Y), the second term will consist of guided student research, its presentation and discussion.

HPS 4104H: Topics in Ancient Greek and Scientific Revolution Mathematics, Craig Fraser

Topics will include the development of pre-Euclidean mathematics, foundational questions in Euclid's Elements, Apollonius' Conics, and mathematical innovations in the work of Diophantus and Pappus. Other topics to be considered are trigonometry and the development of mathematical astronomy, the invention of analytic geometry in the 17th-century, the work of Stevin, Napier on numerical analysis, and the invention of the differential and integral calculus.

HPS 4105H: Topics in the History of the Social and Behavioural Sciences, Mark Solovey

An examination of a particular aspect of the history of these sciences. For example, the history of a discipline (i.e, economics, sociology), method (i.e, statistics, economic forecasting), controversy (i.e, about the proper boundary between social and natural science), time period (i.e, the Enlightenment, the Cold War), and/or geographical location (i.e, the U.S., Canada).

HPS 4300H: Historical Research: Methods, Sources, Approaches, Nikolai Kremontsov

This graduate seminar offers an introduction to the principles of research in the history of

science, medicine, and technology (HSMT). Through a close examination of classic texts and

recent publications in the field, it focuses on sources, methods, and approaches in the practice of the HSMT.

Philosophy of Science Courses (Enrolment in HPS4000-series courses by philosophy-stream students requires that two HPS3000-series courses and one HPS2000-series course have been taken or are concurrently being taken. On the recommendation of the student's faculty advisor, the Director of Graduate Studies may waive some or all of this requirement)

HPS 4500H: Religion and Science on Human Sexuality, Yiftach Fehige

This course deals with human sexuality as an outstanding intersection point of different religious traditions and the sciences. The lectures and discussions will focus on the metaphysical implications that guide the different approaches to human sexuality in science and religion. Topics include: sexualized & religious brains, polygamy, homosexuality, transgenderism, orgasm, and the sex of god.

HPS 4501H: Biology and Human Nature, Marga Vicedo

This course will focus on a different area in the history of the life sciences, such as: history of

modern genetics; evolution and society in the twentieth century; history of research on animal behavior; history of research on instincts; history of ecology; evolutionary explanations of human behavior. The focus will be on reading primary and secondary sources and learning to analyze them critically in their historical context. Requirements will include class presentations, discussion of readings, and short written assignments. In some years, the requirements will include a research paper. Previous knowledge of biology or history is not required.

HPS 4503H: Philosophy Applied to History of Science, Brian Baigrie

This course will consist of a philosophical examination of the (ongoing) revolution in molecular biology, with the goal of framing a portrait of its revolutionary impact.

HPS 4504H: Laws of Nature, Staff

An investigation into the concept of natural law, with emphasis on its role in the sciences and metaphysics. Topics include linguistic versus ontological conceptions of laws, their modal status, and connections to other aspects of knowledge described by scientific theories concerning properties, dispositions, causation, and models. Related issues include the universality of laws, *ceteris paribus* laws, deterministic versus indeterministic laws, reductionism, emergentism, and the unity (or disunity) of the sciences. Sessions will combine lectures, student presentations, and discussions of classic and contemporary literature.

HPS 4505H: Complexity, Reduction and Emergence in Contemporary Biology, Paul Thompson Many biological systems are highly complex and non-linear and manifest autoacatalysis and self-organisation. These features have caused some philosophers, mathematicians and biologist to reject reductionism in biology and to embrace some form of emergence and holism. The course examines the arguments for and against emergence in complex biological systems.

HPS 4506H: Philosophy of Medicine, Paul Thompson

This course examines epistemological issues arising from research and clinical practice in contemporary medicine. Among the issues examined will be: the concept of "evidence" in the Evidence-Based Medicine Movement, the concept of "random" in clinical trials, the epistemological scope and validity of the randomized controlled clinical trial including the philosophy of probability assumed, realism vs. empiricism in medicine, the concepts of "cause," "mechanism" and "statistical (probabilistic) truth."

HPS 4508H: Philosophy of Physics, Joseph Berkovitz

Quantum mechanics is one of the main pillars of modern physics, yet eighty years after its birth it is still difficult to make a good sense of the picture it portrays of the physical reality. The standard way of interpreting the mathematical formalism of quantum mechanics and other alternative interpretations of it are riddled with various difficulties.

In the course, we shall explore the conceptual foundations of quantum mechanics, the differences between the classical and the quantum pictures of the physical reality, and the difficulties in reconciling quantum mechanics with relativity theory.

HPS 4509H: Philosophy of Probability, Joseph Berkovitz

The concept of probability plays a major role in modern science and contemporary philosophy.

While there is a wide consensus about the formal theory of probability, there is no agreement on its exact interpretation. We shall review various interpretations of probability. In light of this review, we shall consider applications of probability in science as well as in philosophical analyses of causation, randomness, statistical inference, rationality and scientific methodology.

HPS 4510H: Philosophy of Economics, Joseph Berkovitz

Nobody could seriously deny that the economic realm dominates many central aspects of our life. Economics is the science that is supposed to describe and explain economic phenomena. Yet, economic theory is a perplexing subject. A few centuries after its birth, its cognitive status and methods are still largely unclear and controversial. The course aims to encourage critical philosophical reflection on modern economic theory and its fundamental concepts and to achieve a better understanding of modern economies and their relevance for society and social justice. We shall evaluate issues including the nature of economic explanation and knowledge, the status of the fundamental postulates, laws, theories and models in contemporary economics, the influence of ideologies in economics, and some major questions in political economy related to collective choice and social justice.

HPS 4511H: Philosophy of Science and Religion, Yiftach Fehige

“Science and Religion” is a relatively young field of research. Philosophy matters crucially both for relating science and religion, and in tackling issues that are central to their relationship. This course explores different models for relating science and religion. Topics include: creation

vs. multiverse in Big-Bang cosmologies, the reliability of human cognitive faculties vs. naturalism, and deductive vs. inductive proofs for the existence of god.

HPS 4512H: Thought Experiments, Yiftach Fehige

In 1811 Hans-Christian Ørsted introduced the word “Tankeexperiment” as a technical term, while reflecting on Immanuel Kant's *Metaphysical Foundations of Natural Science*. A hundred years later, Ernst Mach coined the term “Gedankenexperiment” for philosophical debate.

Yet, serious investigation into thought experiments began only in the 1980s. A number of accounts have been proposed since then, ranging from platonism to eliminative empiricism. In this course we will examine these accounts, and explore many of the paradigmatic thought experiments.

HPS 4513H: The Marxist Theory of Knowledge and History, Staff

Issues covered in the course will include some of the following: fact and interpretation; the historically relative and absolute character of reason; the bearing of sociological causes such as class partisanship upon objectivity; objective relative truths, and absolute truth conceived as their limit; matter; dialectics; chance; causation; value and causation; laws of nature and the history of law-of-nature claims; the historical materialist “grand narrative” and the empirical record; conceptions regarding progress in human knowledge and life.

HPS 4514H: Conceptual and Theoretical Foundations of Historiography, Paul Thompson

This research seminar examines the conceptual and theoretical underpinning of historical research. It includes an examination of interpretation (including the hermeneutic circle), evidence, explanation, confirmation and theoretical conceptions of history (e.g., Vico, Hegel, Mill, Marx, Tolstoy, Spengler and Toynbee).

HPS4600H: Theory of Scientific Change

In this seminar course, we will study how scientific theories and methods of their evaluation change through time. To examine the mechanism of scientific change, we will focus on various aspects of scientific change, such as theory acceptance, method employment, scientific inertia and compatibility, underdeterminism, splitting and merging of scientific mosaics, the role of sociocultural factors and methodologies, etc. We will proceed axiomatically: the theorems of the theory will be deduced from the four axioms – the four laws of scientific change. All axioms and theorems will be illustrated by means of examples from different periods of the history of science. You may choose to write a theoretical essay, in which case you will be expected to discuss, criticise, or amend some parts of the theory. Alternatively, you may choose to write a historical essay by applying the laws of scientific change to a certain historical episode.

HPS4601H Special Topics in the philosophy of Science: Social Epistemology

Joseph Berkovitz

Wednesdays 10-12, Northrop Frye Hall, Room 205

Among the fast growing interdisciplinary fields is the study of the relationships between science and religion. Christian philosophers of the analytic school dominate this field. This explains the revived interest in miracles, a classical topic in the philosophy of religion. The resurgence of interest in miracles is carried by significant changes in the historiography of the so called Scientific Revolution and developments in epistemology pertaining to our understanding of science. This seminar revisits the widely contested idea that there is a God who has violated laws of nature in order to bring about certain events of religious meaning. The principal aim of the course is to contextualize this idea in historical and systematic perspective. A special focus is placed on the growing importance of probability theory in contemporary accounts of miracles. In doing so, the seminar deals with central questions in philosophy of science (the nature of science, laws of nature, scientific explanation, scientific confirmation etc.) and confronts them with fundamental theological claims related to the possibility and nature of miracles.

JPH courses are offered jointly by the Philosophy Department and the IHPST. Either of the following courses may satisfy the philosophy of science requirement for a Master's degree.

JPH 2192H: Philosophy of Science, Staff

An introduction to the subject, focusing on central issues in the metaphysics and epistemology of the sciences. These include the nature of scientific knowledge and theories, various forms of realism and antirealism and questions raised by debates surrounding them (the semantics of theoretical terms, the underdetermination of theory by data, the possibility of scientific progress, the notion of approximate truth), and topics such as abstraction and idealization, modelling, and the possibility of reductionism. We will also consider perspectives offered by the sociology of scientific knowledge and feminist critiques. Sessions will combine lectures, student presentations, and discussions of classic and contemporary literature.

JPH 2194H: Topics in History of the Philosophy of Science, Staff

This course will look at some classical authors on science, from the renaissance to the 19th

century. Sample topics will include: Kepler's new astronomy and the hypothetical method, Bacon's experimental science, Descartes's ideal of a unified science, Newton's rules of reasoning and the law of gravitation, David Hume on causation, John Herschel's methods of experimental inquiry, and William Whewell's philosophy of scientific discovery. Where possible, seminar discussion will focus on the relationship between epistemology and substantive theory and practice.