Committee on Conceptual and Historical Studies of Science

Chair

- Adrian Johns

Professors

- Fredrik Albritton Jonsson, History
- Lorraine Daston, Social Thought
- Arnold Davidson, Philosophy
- James A. Evans, Sociology
- Judith B. Farquhar, Anthropology
- Jan Goldstein, History
- Adrian Johns, History
- Karin Knorr Cetina, Sociology and Anthropology
- Joseph Masco, Anthropology
- Karl Matlin, Department of Surgery
- Salikoko Mufwene, Linguistics
- Robert J. Richards, History
- Michael Rossi, History
- James T. Sparrow, History
- Stephen M. Stigler, Statistics
- Alison Winter, History

Emeritus Faculty

- Robert Perlman, Pediatrics
- William C. Wimsatt, Philosophy

The Committee on Conceptual and Historical Studies of Science (CHSS) is an interdisciplinary graduate program dedicated to advancing social, historical, and philosophical perspectives on science. Its areas of interest are broad, extending across the sciences and from the ancient world to the present day. Its faculty derive from many departments in the University, but particularly from History, Sociology, Anthropology, and Philosophy. We currently have major strengths in the study of evolutionary biology, psychology, and medicine, and in issues of the social activity of science, such as those relating to scientific authority, credibility, communication, and intellectual property.
Students in the Ph.D. program have an opportunity to investigate such aspects of the scientific enterprise in depth, within its many rich historical, social, and philosophical contexts. They are also encouraged to grapple with the practices and approaches of science itself.

A brief description of the Committee’s degree requirements is provided below, along with a representative list of courses that have been taught in recent years. For more complete information, you are encouraged to consult the website at http://chss.uchicago.edu/. This site contains an up to date description of faculty research interests, a complete statement of degree requirements, descriptions of individual courses being taught this year, a calendar of events (including meetings of the Committee’s regular Workshop in the History, Philosophy, and Sociology of Science), a list of students who have received Ph.D.s from the Committee with the titles of their dissertations, and more.

Those with questions about the Committee should write to the Secretary, The Committee on Conceptual and Historical Studies of Science, The University of Chicago, 1126 East 59th Street, Chicago, IL 60637 (bethcalderon@uchicago.edu (bbmackev@uchicago.edu) ).

Application

New students are admitted to the Committee through the Division of the Social Sciences. Applicants will be expected to submit undergraduate transcripts, scores from the general Graduate Record Examination, three letters of recommendation, short descriptions of their interests and/or reasons for wanting to study in CHSS, and a writing sample.

The application process for admission and financial aid for all Social Sciences graduate programs is administered through the divisional Office of the Dean of Students. The Application for Admission and Financial Aid, with instructions, deadlines and department specific information is available online at: https://socialsciences.uchicago.edu/admissions/apply. Questions pertaining to admissions and aid should be directed to admissions@ssd.uchicago.edu (admissions@ssd.uchicago.edu) or (773) 702-8415.

Our application process is now entirely online (paperless). All supporting material - including letters of recommendation, transcripts, and writing samples (if required by a specific department) - must be submitted electronically through the online application.

More information about applying to programs in the University of Chicago's Division of the Social Sciences can be found at https://socialsciences.uchicago.edu/admissions .

Degree Requirements

Every new student in CHSS is assigned an advisor, with whom he or she designs an individual program of study. Because the interests of students within CHSS vary widely, so too do these programs. Yet all students are expected to fulfill certain common requirements.
Full and up to date details are given on the website, but the main elements are described here.

Students choose one of the following options:

1. **SCIENCE OPTION:** The student may earn a master’s degree in a science (here understood to include mathematics, statistics, and social science).
2. **PHILOSOPHY OPTION:** The student may earn a master’s degree in philosophy.
3. **HISTORY OPTION:** The student may earn a master’s degree in history.

All students must complete a total of at least eighteen courses at the University for a grade of B or better, including at least seven CHSS courses. They must maintain at least a B+ average every quarter. Those selecting the philosophy or history options must take a coherent series of six courses in a scientific area at the University, approved by the committee and of an appropriately advanced nature. This will normally mean that students must take at least some portion of their science work at a graduate level. Note that if a student enters the program with a master’s degree in an appropriate area, the committee determines what level of credit is given for it.

The expected timetable is that students entering with a master’s degree will complete coursework by the end of the second year, and those entering without will complete it by the end of year three (see the website for this and other details of the expected timetable).

Among the coursework of the first two years, students should take three courses offered by the committee: Philosophy of Science, History of Science, and Introduction to Science Studies.

Students must then pass two oral examinations. Each student has the option of taking the exams in history of science, philosophy of science, sociology of science, or anthropology of science; but at least one of the exams must be in either history of science or philosophy of science. These exams are, in part, designed by the students themselves.

At this point the student writes a dissertation proposal, and defends it at a hearing before his or her dissertation committee. He or she is then considered to have advanced to Ph.D. candidacy, and proceeds to write the dissertation itself.

**Courses**

The department website offers descriptions of representative courses offered in recent years: http://chss.uchicago.edu/page/courses
Committee on Conceptual and Historical Studies of Science

Conceptual/Historical Studies of Science Courses

**CHSS 32805. Nature/Culture. 100 Units.**
Exploring the critical intersection between science studies and political ecology, this course interrogates the contemporary politics of "nature." Focusing on recent ethnographies that complicated our understandings of the environment, the seminar examines how conceptual boundaries (e.g., nature, science, culture, global/local) are established or transgressed within specific ecological orders.
Instructor(s): J. Masco
Terms Offered: Winter (Tentative)
Equivalent Course(s): ANTH 43805, HIPS 26203, ANTH 23805

**CHSS 32900. History of Statistics. 100 Units.**
This course covers topics in the history of statistics, from the eleventh century to the middle of the twentieth century. We focus on the period from 1650 to 1950, with an emphasis on the mathematical developments in the theory of probability and how they came to be used in the sciences. Our goals are both to quantify uncertainty in observational data and to develop a conceptual framework for scientific theories. This course includes broad views of the development of the subject and closer looks at specific people and investigations, including reanalyses of historical data.
Instructor(s): S. Stigler
Terms Offered: Spring
Prerequisite(s): Prior statistics course
Equivalent Course(s): STAT 26700, HIPS 25600, STAT 36700

**CHSS 33300. Introduction to the Philosophy of Science. 100 Units.**
We will begin by trying to explicate the manner in which science is a rational response to observational facts. This will involve a discussion of inductivism, Popper’s deductivism, Lakatos and Kuhn. After this, we will briefly survey some other important topics in the philosophy of science, including underdetermination, theories of evidence, Bayesianism, the problem of induction, explanation, and laws of nature. (B)(II)
Instructor(s): K. Davey
Terms Offered: Winter

**CHSS 33500. Elementary Logic. 100 Units.**
An introduction to the techniques of modern logic. These include the representation of arguments in symbolic notation, and the systematic manipulation of these representations in order to show the validity of arguments. Regular homework assignments, in class test, and final examination.
Instructor(s): M. Kremer
Terms Offered: Autumn
Prerequisite(s): No prerequisites. Course not for field credit.
Note(s): Undergrads enroll in sections 01 through 08. Graduates enroll in section 09.
Equivalent Course(s): HIPS 20700, PHIL 30000, PHIL 20100

**CHSS 33600. Intermediate Logic. 100 Units.**
In this course, we will prove the soundness and completeness of deductive systems for both sentential and first-order logic. We will also establish related results in elementary model theory, such as the compactness theorem for first-order logic, the Lowenheim-Skolem theorem and Lindstrom’s theorem. (II) (B)
Instructor(s): A. Vasudevan
Terms Offered: Winter
Note(s): Undergrads enroll in sections 01 & 02. Graduates enroll in section 03.
Equivalent Course(s): HIPS 20500, PHIL 39600, PHIL 29400
CHSS 34913. Victorian Science. 100 Units.
This course examines how Victorians sought to understand the natural world, and how their scientific work helped develop modern intellectual conventions, social relations, and institutions. We will study a wide range of topics from the 1830s through the beginning of the twentieth century in order to develop a kind of panorama of scientific life and to determine when key features of modern science came into being.
Instructor(s): A. Winter
Terms Offered: Winter

CHSS 35014. Introduction to Environmental History. 100 Units.
How have humans interacted with the environment over time? This course introduces students to the methods and topics of environmental history by way of classic and recent works in the field: Crosby, Cronon, Worster, Russell, and McNeill, et al. Major topics of investigation include preservationism, ecological imperialism, evolutionary history, forest conservation, organic and industrial agriculture, labor history, the commons and land reform, energy consumption, and climate change. Our scope covers the whole period from 1492 with case studies from European, American, and British imperial history.
Instructor(s): F. Albritton Jonsson
Terms Offered: Winter
Equivalent Course(s): HIST 35014,HIPS 25014,HIST 25014

CHSS 35506. Science and Aesthetics in the Eighteenth to the Twenty-First Centuries. 100 Units.
One can distinguish four ways in which science and aesthetics are related during the period since the Renaissance. First, science has been the subject of artistic representation, in painting and photography, in poetry and novels (e.g., in Byron’s poetry, for example). Second, science has been used to explain aesthetic effects (e.g., Helmholtz’s work on the way painters achieve visual effects or musicians achieve tonal effects). Third, aesthetic means have been used to convey scientific conceptions (e.g., through illustrations in scientific volumes or through aesthetically affective and effective writing). Finally, philosophers have stepped back to consider the relationship between scientific knowing and aesthetic comprehension (e.g., Kant, Bas van Fraassen); much of the discussion of this latter will focus on the relation between images and what they represent. In this lecture-discussion course we will consider all of these aspects of the science-aesthetic connection.
Instructor(s): R. Richards
Terms Offered: Spring
Equivalent Course(s): HIPS 25506,HIST 35506,PHIL 24301,PHIL 34301,SIGN 26003,HIST 25506

CHSS 37502. Energy and Energy Policy. 100 Units.
This course shows how scientific constraints affect economic and other policy decisions regarding energy, what energy-based issues confront our society, how we may address them through both policy and scientific study, and how the policy and scientific aspects can and should interact. We address specific technologies, both those now in use and those under development, and the policy questions associated with each, as well as with more overarching aspects of energy policy that may affect several, perhaps many, technologies.
Instructor(s): S. Berry, G. Tolley
Terms Offered: Autumn
Prerequisite(s): PQ: Third- or fourth-year standing. For ECON majors who want ECON credit for this course (ECON 26800): PQ is ECON 20100.
Equivalent Course(s): ECON 26800,ENST 29000,PBPL 29000,PPHA 39201,PSMS 39000,BPRO 29000
CHSS 37901. Kant's "Critique of Pure Reason" 100 Units.  
This will be a careful reading of what is widely regarded as the greatest work of modern philosophy, Immanuel Kant’s *Critique of Pure Reason*. Our principal aims will be to understand the problems Kant seeks to address and the significance of his famous doctrine of "transcendental idealism". Topics will include: the role of mind in the constitution of experience; the nature of space and time; the relation between self-knowledge and knowledge of objects; how causal claims can be justified by experience; whether free will is possible; the relation between appearance and reality; the possibility of metaphysics. (B) (V) 
Instructor(s): M. Boyle Terms Offered: Spring  
Note(s): Undergrads enroll in sections 01, 02, 03 & 04. Graduates enroll in section 05. Equivalent Course(s): HIPS 25001,FNDL 27800,PHIL 37500,PHIL 27500

CHSS 38305. Catastrophic Thinking: Extinction in Culture and Science. 100 Units.  
The course will examine the history of extinction through a consideration not only of relevant scientific literature, but also through the diverse forms of cultural production through which the scientific ideas have refracted: fiction and science fiction, film, political discourse, journalism and popular science, philosophy, religion, and more. From the apocalyptic visions of religious movements and cults, to protest movements of the ‘60s, ‘70s, and ‘80s, to fascination with zombies and world-ending plagues and catastrophes, we will consider the many ways in which “catastrophic thinking” about extinction has come to permeate the modern condition in science and society.  
Instructor(s): D. Sepkoski Terms Offered: Spring  
Equivalent Course(s): HIST 25420,HIST 35420,HIPS 28305

CHSS 39405. Advanced Logic. 100 Units.  
Since Russell's discovery of the inconsistency of Frege's foundation for mathematics, much of logic has resolved around the question of to what extent we can or cannot prove the consistency of the basic principles with which we reason. This course will explore two main efforts in this direction. We will first look at proof-theoretic efforts towards demonstrating the consistency of various foundational systems, discussing the virtues and limitations of this approach. We will then closely examine Godel's theorems, which are famous for demonstrating limits on the extent to which we can formulate consistency proofs. Much has been written on the implications of Godel's theorems, and we will spend some time trying to carefully separate what they really entail from what they do not entail. Assessment will be by regular homework sets. (II) and (B)  
Instructor(s): K. Davey Terms Offered: Autumn  
Prerequisite(s): Intermediate logic or prior equivalent required. Equivalent Course(s): PHIL 39405,HIPS 20905,PHIL 29405
CHSS 40201. Reason and Religion. 100 Units.
The quarrel between reason and faith has a long history. The birth of Christianity was in the crucible of rationality. The ancient Greeks privileged this human capacity above all others, finding in reason the quality wherein man was closest to the gods, while the early Christians found this viewpoint antithetical to religious humility. As religion and its place in society have evolved throughout history, so have the standing of, and philosophical justification for, non-belief on rational grounds. This course will examine the intellectual and cultural history of arguments against religion in Western thought from antiquity to the present. Along the way, of course, we will also examine the assumptions bound up in the binary terms "religion" and "reason."
Instructor(s): Shadi Bartsch and Robert Richards Terms Offered: Winter
Prerequisite(s): Consent required: Email sbartsch@uchicago.edu a few sentences describing your background and what you hope to get out of this seminar.
Equivalent Course(s): DVPR 46616, KNOW 40201, CLAS 46616, CDIN 40201

CHSS 41920. The Evolution of Language. 100 Units.
How did language emerge in the phylogeny of mankind? Was its evolution saltatory or gradual? Did it start late or early and then proceed in a protracted way? Was the emergence monogenetic or polygenetic? What were the ecological prerequisites for the evolution, with the direct ecology situated in the hominine species itself, and when did the prerequisites obtain? Did there ever emerge a language organ or is this a post-facto construct that can be interpreted as a consequence of the emergence of language itself? What function did language evolve to serve, to enhance thought processes or to facilitate rich communication? Are there modern “fossils” in the animal kingdom that can inform our scholarship on the subject matter? What does paleontology suggest? We will review some of the recent and older literature on these questions and more.
Instructor(s): S. Mufwene Terms Offered: Winter
Equivalent Course(s): ANTH 47305, CHDV 41920, EVOL 41920, PSYC 41920, LING 21920, CHDV 21920, LING 41920

CHSS 42300. Scientific/Technological Change. 100 Units.
No description available.
Equivalent Course(s): HIPS 20300
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Trajan.

Times was used instead of Palatino.

The editor may contact Leepfrog for a draft with the correct fonts in place.