

History, Philosophy, and Social Studies of Science and Medicine (HIPS)

Director: Robert J. Richards, SS 205, 702-8391

Secretary: Betty Mackevich, SS 207, 702-8391

Program of Study

The B.A. program in the History, Philosophy, and Social Studies of Science and Medicine (HIPS) is designed for College students interested in studying science in terms of its historical development, conceptual structure, and social role. Students in the program must do sufficient work in one or more sciences to acquire a sound foundation for studying the nature of science. After securing this basis, they are expected to gain an understanding of how science arose, as well as how the content of scientific thought has changed and is changing, because of both its own internal dynamic and its interaction with the larger society in which it is embedded.

The HIPS program is designed to make possible the study of a wide range of social, historical, and conceptual issues relating to science. Students completing the program follow a number of different careers. Some pursue graduate study in the history and philosophy of science or in some field of science. Others find the program valuable preparation for the study of medicine, law, public policy, or science journalism. More generally, the goal of the program is to provide students with a sound basis on which to interpret and evaluate science and science policy. Some students choose to construct a degree program combining the requirements for the HIPS major with those for a major in the physical or biological sciences. Others, having met the HIPS program requirements, use electives to broaden their liberal arts education.

HIPS Sponsor. The Morris Fishbein Center for the History of Science and Medicine sponsors the HIPS program. Further information can be obtained in the center's office (SS 207).

Program Requirements

Elements of the Curriculum. The curriculum of the program contains five principal elements:

1. **The Foundation.** All students must:
 - a. complete the general education requirement for the biological sciences with BIOS 10110 plus a topics course (BIOS 11108-15118), or the first two courses of a Fundamental Sequence (BIOS 20180s or 20190s);

- b. complete the general education requirement in the physical sciences with a physics sequence (PHYS 12100-12200 or its equivalent) or a chemistry sequence (CHEM 11101-11201/11102-11202 or equivalent), or have earned a score of 5 on the AP Chemistry or Physics test or a score of 4 or 5 on the AP Physics C Mechanics and E&M test;
 - c. complete a calculus sequence (MATH 13100-13200 or higher), or have earned a score of 5 on the AP Calculus BC test; and
 - d. complete the three-quarter sequence surveying the growth of science in Western civilization: Science, Culture, and Society in Western Civilization (HIPS 17300-17400-17501 [or 17502]).
2. **Advanced Science.** In addition to the science courses typically taken as part of the general education requirements, students are expected to take three courses in science, social sciences, or mathematics beyond the introductory level. They select these advanced courses according to their special aims, their area of concentration, and the subject of their bachelor's thesis.
3. **Areas of Concentration.** All students in the program determine an area of concentration in the history, philosophy, ethics, and/or social contexts of science and medicine. In consultation with the program director and their program adviser, students select five courses to constitute this concentration area. For example, some students may be particularly interested in the epistemological issues related to the growth of science; others may be especially concerned with the intellectual and social interactions between changing scientific knowledge and institutions, on the one hand, and evolving social institutions, on the other; a third group may wish to emphasize moral and political problems attending the employment of technology generated by advances in science.
4. **Tutorials.** Students are required to take two tutorial courses; this is typically done early in their program. These tutorials are small classes (from three to ten students) that emphasize discussion and writing. Lists of courses for the coming year are available in the HIPS office (SS 207).
5. **Bachelor's Thesis and Junior/Senior Seminar.** Third- and fourth-year students enroll in a designated one-quarter seminar (HIPS 29800) that deals with general aspects of history, philosophy, and social studies of science and medicine. In their fourth year, students complete the program with a bachelor's thesis (HIPS 29900). In Spring Quarter of their third year, students should discuss their proposal for their bachelor's thesis with the program director. In consultation with the program director, students then sign up for a reading and research course with an appropriate faculty member. This research course should lead to a thesis that integrates each student's academic studies, bringing them to bear on a significant question related to some historical, conceptual, ethical, or social aspect of science.

Fourth-year students also enroll in a two-quarter Bachelor's Thesis Workshop (HIPS 30100), which is comprised of meetings that focus on organizing, researching, writing, and revising the thesis. Students register only once (in Autumn Quarter) for HIPS 30100, but attend four meetings (two in Autumn Quarter and two in Winter Quarter).

Summary of Requirements

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| <i>General Education</i> | | HIPS 17300-17400-17501 (or 17502) BIOS 10110* plus a topics course (BIOS 11108-15118) or BIOS 20181-20182 or higher CHEM 11101-11201/11102-11202 or equivalent*, or PHYS 12100-12200 or higher* MATH 13100-13200 or higher* |
| <i>Major</i> | 3 | courses in science, social sciences, or mathematics beyond the introductory level |
| | 5 | courses in an area of concentration |
| | 2 | HIPS 29400 to 29600 (tutorial courses) |
| | 1 | HIPS 29800 (junior/senior seminar) |
| | 1 | HIPS 29900 (bachelor's thesis) |
| | <u>1</u> | HIPS 30100 (thesis workshop) |
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* *Credit may be granted by examination.*

Examples of Concentrations. The following are meant to illustrate areas of concentration. They are not prescriptive, only suggestive. For the particular courses that might constitute their area of concentration, students should consult with the director of the program, examine this course catalog, and visit timeschedules@uchicago.edu.

History and Philosophy of Biological Science

HIPS 22700. Philosophy of Biology
HIPS 23600. History and Theory of Human Evolution
HIPS 23900. Biological and Cultural Evolution
HIPS 25800. Darwin's Romantic Biology
HIPS 28400. Darwin's Origin of Species

Philosophy of Science

HIPS 20300. Scientific and Technological Change
HIPS 22000. Philosophy of Science
HIPS 22300. Philosophy of the Social Sciences
HIPS 24900. Natural Philosophy, 1200 to 1800
HIPS 25400. Philosophy of Mind and Science Fiction

History of Medicine and Medical Ethics

HIPS 15000. Science and Medicine Today
 HIPS 21400. Introduction to Medical Ethics
 HIPS 21600. Advanced Medical Ethics
 HIPS 25900. Darwinian Medicine
 HIPS 27300. Medicine and Culture

Admission. To be eligible for admission, students should have completed at least two of the four foundation course sequences listed in the preceding section and should have maintained a 3.2 GPA or higher in previous course work. Admission is completed when students have taken the remaining foundation courses and have formulated a plan of study; this is typically done before their third year. Application for admission should be made to the director of the program, who advises students about the requirements, arranges a preliminary plan of study, and discusses scheduling conflicts and special cases. Thereafter, a student chooses, in consultation with the director, a B.A. adviser from the staff.

Honors. Students who meet the following criteria are considered for graduation with honors in the major: (1) overall GPA of 3.3 or higher, (2) completion of a bachelor's thesis of *A* quality, and (3) a majority vote by the faculty in favor of honors.

Grading. Students majoring in HIPS must receive quality grades in all courses meeting the requirements of the degree program. Nonmajors may take courses on a *P/F* basis with consent of instructor.

Advisers. The faculty for the HIPS program is drawn from many parts of the University. The following have direct responsibility for admitting students, formulating curriculum, and advising.

Minor Program in History, Philosophy and Social Studies of Science and Medicine

Students in other fields of study may complete a minor in HIPS, in particular, the minor program in HIPS offers students who are majoring in science the opportunity to gain an understanding of the conceptual, historical, and social contexts in which their disciplines are situated.

The minor requires a total of six courses. Courses in the minor (1) may not be double counted with the student's major(s) or with other minors and (2) may not be counted toward general education requirements. Courses in the minor must be taken for quality grades, and more than half of the requirements for the minor must be met by registering for courses bearing University of Chicago course numbers.

Students should take at least two courses of the sequence "Science, Culture, and Society in Western Civilization" (HIPS 17300-17400-17501 [or 17502]) to meet the general education requirement in civilization studies. Additional courses in

this sequence that are not used to meet the general education requirement can count toward courses required for the minor.

Students must complete one tutorial course. Tutorials are small classes that emphasize discussion and writing. The specific focus changes each year. Visit timeschedules.uchicago.edu for specific offerings.

The remaining five courses for the minor program should constitute an area of concentration in the history, philosophy, ethics, and/or social contexts of science and medicine. Students select the courses that constitute this concentration in consultation with the program director and their program adviser.

Students who elect the minor program in HIPS should meet with the program director before the end of Spring Quarter of their third year to declare their intention to complete the program. (The deadline for students graduating in 2006–07 is the end of Winter Quarter 2007.) The director's approval for the minor program should be submitted to the student's College adviser by the deadline above on a form obtained from the adviser.

The following groups of courses would satisfy the requirements for a minor in HIPS. They are only meant to illustrate possible plans of study; they are not prescriptive.

Tutorial: HIPS 29405. Evolution and Pragmatism
Concentration in History and Philosophy of Biology:

HIPS 22700. Philosophy of Biology
HIPS 23600. History and Theory of Human Evolution
HIPS 23900. Biological and Cultural Evolution
HIPS 25800. Darwin's Romantic Biology
HIPS 28400. Darwin's Origin of Species

Tutorial: HIPS 29606. Medicine, Disease, and Death in American History
Concentration in History of Medicine and Medical Ethics:

HIPS 17501. Science, Culture, and Society in Western Civilization III:
Medicine since the Renaissance (if this course is not used to meet general education requirements)
HIPS 21400. Introduction to Medical Ethics
HIPS 21600. Advanced Medical Ethics
HIPS 21901. Autonomy and Medical Paternalism
HIPS 27300. Medicine and Culture

Faculty

J. Comaroff, A. Davidson, A. D. Goldblatt, A. Johns, J. Lantos, R. Richards, L. Ross,
G. Stocking, Jr., N. Swerdlow, W. Wimsatt, A. Winter

Courses: History, Philosophy, and Social Studies of Science and Medicine (HIPS)

Foundation Sequence

HIPS 17300-17400-17501 or 17502. Science, Culture, and Society in Western Civilization I, II, III. (=HIST 17300-17400-17501 or 17502) *Each course may be taken individually, although it is recommended that students take the entire sequence in order. This sequence meets the general education requirement in civilization studies.* This three-quarter sequence focuses on the origins and development of science in the West. The aim is to trace the evolution of the biological, psychological, natural, and mathematical sciences as they emerge from the cultural and social matrix of their periods, and in turn, affect culture and society.

17300. The first quarter examines the sources of Greek science in the diverse modes of ancient thought and its advance through the first centuries of our era. We look at the technical refinement of science, its connections to political and philosophical movements of fifth- and fourth-century Athens, and its growth in Alexandria. *R. Richards. Autumn.*

17400. The second quarter is concerned with the period of the scientific revolution: the sixteenth to eighteenth centuries. The principal subjects are the work of Copernicus, Kepler, Galileo, Vesalius, Harvey, Descartes, and Newton. *N. Swerdlow. Winter.*

17501. Medicine since the Renaissance. An examination of various themes in the history of medicine in western Europe and America since the Renaissance. Topics include key developments of medical theory (e.g., the circulation of the blood and germ theory), relations between doctors and patients, rivalries between different kinds of healers and therapists, and the development of the hospital and laboratory medicine. *D. Lauderdale, A. Winter. Spring.*

17502. Modern Science. The advances science has produced have transformed life beyond anything that a person living in 1833 (when the term “scientist” was first coined) could have anticipated. Yet science continues to pose questions that are challenging and, in some instances, troubling. How will our technologies affect the environment? Should we prevent the cloning of humans? Can we devise a politically acceptable framework for the patenting of life? Such questions make it vitally important that we try to understand what science is and how it works, even if we never enter labs. This course uses evidence from controversies (e.g., Human Genome Project, International Space Station) to throw light on the enterprise of science itself. *A. Johns. Spring.*

Tutorials

HIPS 29400-29500-29600. Tutorial. *Autumn, Winter, Spring.*

Seminar and Research

HIPS 29700. Readings and Research in History, Philosophy, and Social Studies of Science and Medicine. *Students are required to submit the College Reading and Research Course Form. Autumn, Winter, Spring.*

HIPS 29800. Junior/Senior Seminar: My Favorite Readings in the History and Philosophy of Science. (=HIST 25502) This course introduces some of the most important and influential accounts of science to have been produced in modern times. It provides an opportunity to discover how philosophers, historians, anthropologists, and sociologists have grappled with the scientific enterprise, and to assess critically how successful their efforts have been. Authors likely include Karl Popper, Thomas Kuhn, Robert Merton, Steven Shapin, and Bruno Latour. *R. Richards. Winter.*

HIPS 29900. Bachelor's Thesis. *Students are required to submit the College Reading and Research Course Form.* This is a research course for independent study related to thesis preparation. *Autumn, Winter, Spring.*

HIPS 30100. Bachelor's Thesis Workshop. *Students register only once (in Autumn Quarter) but attend four meetings (two in Autumn Quarter and two in Winter Quarter).* The purpose of this course is to assist students in organizing, researching, writing, and revising their thesis. *Autumn.*

Other Courses in the Major

Courses other than those included in the preceding sample curricula or in the list that follows may be appropriate for HIPS students; visit timeschedules.uchicago.edu for possible additions.

HIPS 20202. Early Modern Philosophy and Science. (=PHIL 26005) *L. Patton. Spring, 2007.*

HIPS 20500. Intermediate Logic I. (=CHSS 33600, PHIL 29400/39600) *M. Kremer. Winter.*

HIPS 20601. Boundaries, Modules, and Levels. (=BPRO 22200, PHIL 22210) *W. Wimsatt, J. Haugeland. Offered 2007-08; not offered 2006-07.*

HIPS 20700. Elementary Logic. (=CHSS 33500, PHIL 20100/30000) *J. Bridges. Autumn.*

HIPS 20900. Intermediate Logic II: Incompleteness. (=CHSS 34000, PHIL 29401/39700) *K. Davey. Spring.*

HIPS 21000. Introduction to Ethics. (=ISHU 29200, PHIL 21000) *C. Vogler. Spring.*

HIPS 21100. The Practice of Anthropology: Celebrity and Science in Paleoanthropology. (=ANTH 21406/38300) *R. Tuttle. Winter, 2007.*

HIPS 21401. Introduction to Medical Ethics. (=BIOS 29281) *L. Ross. Winter.*