

INDIANA UNIVERSITY

University Graduate School
2005-2006
Academic Bulletin

University Graduate School
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Indiana University
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History and Philosophy of Science

College of Arts and Sciences
Bloomington

Chairperson

Professor William Newman

Departmental URL

www.indiana.edu/~hpscdept

Graduate Faculty

(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

Distinguished Professors

H. Scott Gordon* (Emeritus, Economics), Edward Grant* (Emeritus, History)

Professors

Colin Allen*, Domenico Bertoloni Meli*, Frederick Churchill* (Emeritus), Noretta Koertge* (Emerita), Elisabeth A. Lloyd*, William Royall Newman*

Associate Professors

James H. Capshew*, Ann Carmichael* (History)

Assistant Professors

Jordi Cat, Sander J. Gliboff, Christopher Aaron Martin, Jutta Schickore

Graduate Advisor

Professor Colin Allen, Goodbody Hall 1, (812) 855-8916

Degrees Offered

Master of Arts, dual Master of Arts and Master of Library Science (jointly with the School of Library and Information Science), and Doctor of Philosophy

Special Departmental Requirements

(See also general University Graduate School requirements.)

Admission Requirements

Either (1) an undergraduate major in a science or a related group of sciences with a minor in either history or philosophy or (2) an undergraduate major in either history or philosophy with a strong minor in science; or a similar background.

Master of Arts Degree

Course Requirements

A total of 36 credit hours of course work or 30 credit hours of course work together with a satisfactory M.A. thesis. Students who do not write a thesis must choose at least one course which requires the writing of a major research paper. Both options require 24 hours of course work in the department; at least four courses must be selected from the core courses listed below (X506, X507, X551, X552, X556, X706). Students intending to take Ph.D. qualifying exams are advised to take more than the minimum number of core courses required for the M.A.

Grades

A 3.3 (B+) grade point average in departmental courses is required.

Foreign Language/Research-Skill Requirement

Proficiency in one language or one research skill. Students are typically expected to complete this requirement before registering for their third semester in the department.

Dual Master of Arts and Master of Library Science Degrees

Study for these two degrees can be combined for a total of approximately 51 credit hours rather than the 66 credit hours required for the two degrees taken separately. Students must take 21 credit hours in history and philosophy of science, including three core courses (X506, X507, X551, X552, X556, or X706). The course of studies must be planned in consultation with a history and philosophy of science advisor. Students must also complete 30 credit hours of School of Library and Information Science (SLIS) courses, including 9 credit hours minimum from the common core and 9 credit hours minimum from the M.L.S.-specific core for a total of 18 credit hours in addition to SLIS L586, L624, and L596. Admission to each of the two areas of study is approved separately on the same basis as for other applicants not in the dual program.

Doctor of Philosophy Degree

Admission Requirement

Either (1) an undergraduate major in a science or a related group of sciences with a minor in either history or philosophy or (2) an undergraduate major in either history or philosophy with a strong minor in science; or a similar background.

Fields of Study

A student may concentrate in either the history or the philosophy of science or pursue both fields simultaneously.

Course Requirements

A total of 90 credit hours, including courses that meet all requirements for the M.A., plus at least two additional courses approved by the department from its offerings. Students intending to take Ph.D. qualifying exams are advised to take more than the minimum number of core courses required for the M.A. A maximum of 30 credit hours for dissertation work (X700 and X800) may be counted toward the 90 credit hours.

Minor

One minor outside the department is required. The requirements for this minor are set by the department involved. Outside minor fields that students in the history and philosophy of science program have commonly taken include history, mathematics, philosophy, or one of the sciences.

Foreign Language/Research-Skill Requirement

Proficiency either (1) in two languages, or (2) in one language and one research skill, or (3) in one language in depth, depending on the recommendation of the student's advisory committee. Students are

normally expected to complete one of these requirements before their third semester in residence and the second-language or tool-skill requirement before their fifth semester.

Qualifying Examination

Written and oral. Examination in minor area is left to the discretion of the minor department. Examinations may not be taken more than twice, except in extraordinary cases.

Research Proposal

Upon advancement to candidacy, if not before, the student must submit and gain departmental approval of a research proposal.

Ph.D. Minor in History and Philosophy of Science

Graduate students from other departments desiring a minor in history and philosophy of science must complete 12 graduate credit hours of course work in the department with a B+ or higher. The set of courses should represent a coordinated objective and must be approved by the department.

Courses

Core Courses

X506 Survey of History of Science up to 1750 (3 cr.) Ancient, Medieval, Renaissance, and Enlightenment science.

X507 Survey of History of Science since 1750 (3 cr.) Growth of physical, biological, and social sciences during the nineteenth and twentieth centuries. Attention will be paid not only to the scientific contents but to the institutional and social context.

X521 Research Topics in the History and Philosophy of Science (1-3 cr.)

X551 Survey of the Philosophy of Science (3 cr.) Science claims to tell us what the world is like, even the part of the world we cannot see, and to explain why things happen the way they do. But these claims are controversial. Examination of competing models of scientific explanation and the ongoing debate over whether scientific theories should or even can be interpreted realistically.

X552 Modern Philosophy of Science (3 cr.) Origin and character of twentieth-century philosophy of science. Examination of the historical development of the philosophy of science-in interaction with parallel developments within the sciences themselves-from 1800 to the early twentieth century.

X556 Philosophy of Science in Antiquity (3 cr.) Historical survey of philosophical discussions of the nature of science, in the premodern period, to include figures such as Plato, Aristotle, Epicurus, Augustine, and Aquinas.

X706 Special Topics in the History and Philosophy of Science (2-4 cr.) Content and instructors will vary; students may thus receive credit more than once. Admission by consent of instructor or chairperson.

Seminars in History of Science

X602 Seminar in Medieval Science (3 cr.) P: X506 or consent of instructor. Selected topics.

X603 Seminar in Renaissance Science (3 cr.) P: X506 or consent of instructor. Selected topics.

X609 Seminar in Modern Science (3 cr.) P: X507 or consent of instructor. Selected topics.

X705 Special Topics in the History of Science (2-5 cr.) Content and instructors will vary; students may thus receive credit more than once. Admission by consent of instructor or chairperson.

Issues in Philosophy of Science

X755 Special Topics in the Philosophy of Science (2-5 cr.) Content and instructors will vary; students may thus receive credit more than once. Admission by consent of instructor or chairperson.

X756 Special Topics in the Philosophy of Science (2-5 cr.) Content and instructors will vary; students may thus receive credit more than once. Admission by consent of instructor or chairperson.

X790 Space, Time and Relativity of Theory (3 cr.) Topics in the philosophy of space, time, and space-time. Theory of motion and Zeno's paradoxes; St. Augustine on time; time and becoming; relational versus absolute theories of space and time; Mach's principle; introduction to Einstein's theory of relativity and space-time.

Conceptual Foundations of Modern Physical Sciences

X332 History of Modern Physics (3 cr.) P: PHYS P222 or consent of instructor. Origins and development of the electromagnetic theory of radiation, special relativity, and nonrelativistic quantum theory. Contributions of Faraday, Maxwell, Lorentz, Einstein, Planck, Bohr, Heisenberg, and Schrödinger.

X791 Philosophical Issues in Quantum Theory (3 cr.) Examination of philosophical problems and challenges raised by quantum theory, with topics including Heisenberg uncertainty relations, nonlocality and EPR paradox, hidden variables, interpretations of quantum theory. No previous knowledge of quantum theory assumed.

Conceptual Foundations of the Life Sciences

X493 Structure and Methods of the Life Sciences (3 cr.)

X508 History of Biology (3 cr.) P: junior standing or consent of instructor. Survey of the important concepts in biology from antiquity to the twentieth century. Emphasis on changes in evolution theory and concepts of development and inheritance. A familiarity with biology is helpful but not necessary.

X632 Seminar: Historical Problems in Evolutionary Biology (3 cr.) P: X325 or X408/X508 or consent of instructor. Historical examination of such topics as pre-Darwinism, *Naturphilosophie*, Darwin and *The Origin of Species*, rise of modern systematics, and concepts of race. Content will vary; students may receive credit more than once.

Conceptual Foundations of the Social and Behavioral Sciences

X642 History of Psychology (3 cr.) Explores the scientific, professional, and cultural dimensions of modern psychology, including its emergence as an academic discipline in the late nineteenth century. Focus on interpretive issues raised by recent scholarship.

X654 Seminar: Philosophy of the Social Sciences (4 cr.) P: X552 or consent of instructor. Examination of such topics as objectivity, generality, social laws, role of values in social inquiry, methodological individualism, and relation of the social sciences to psychology, operationism, behaviorism, and other reductivist proposals.

Science in Cultural Contexts

X301 Growth of Scientific Establishment (3 cr.) Development of the modern scientific community from its origins to the twentieth century. Special attention to the impact of the ever-increasing involvement of science in industrial, medical, and military technology.

X645 History of American Science (3 cr.) An historical exploration of the intellectual and institutional development of science in the United States from colonial times to the present. Examines recent scholarship in the history of American science and related historiographical trends and issues.

X670 Science and Gender (3 cr.) The role of science and technology in constructions of masculinity and femininity from 1600 to present. Historical and philosophical analysis of the interaction between science and technology and ideologies of gender. Evaluation of proposals for transforming science.

X671 Topics in the Science of Sex and Gender (3 cr.) P: may vary with topic. Possible topics include history of theories of sexuality, critique of current scientific concepts of sex and gender, philosophical perspectives on sexology, and the history of theories of sex evolution and determination. May be repeated twice for credit with different topic.

Cross-Listed Course in Anthropology

H500 History of Anthropological Thought in the Nineteenth and Twentieth Centuries (3 cr.)

Cross-Listed Course in English

L769 Literature and Science (4 cr.)

Cross-Listed Course in Journalism

J554 Seminar: Science Writing (3 cr.)

Cross-Listed Course in Sociology

S660 Sociology of Science (3 cr.)

Individualized Study

X600 Advanced Readings Course (cr. arr.)**

X700 M.A. Thesis (cr. arr.)**

X800 Ph.D. Thesis (cr. arr.)**

History of Medicine (available from the Department of History)

A broad range of colloquia and seminars covering the history of medicine from antiquity to modern America are offered on a regular basis.

Logic (available from the Department of Philosophy)

P350 Logic of Sets (3 cr.)

P351 Formal Semantics (3 cr.)

P505-P506 Logical Theory I-II (3-3 cr.)

P550 Systems of Modal Logic (3 cr.)

P551 Philosophy and Foundations of Mathematics (3 cr.)

P552 Philosophy of Logic (3 cr.)

P750 Seminar: Logical Theory (4 cr.)

P751 Seminar: Logic (4 cr.)

**These courses are eligible for a deferred grade.