

**MATH 660 Geometry I** (3). N An introduction to modern geometry. Differential geometry of curves and surfaces, the topological classification of closed surfaces, dynamical systems, and knots and their polynomials. Other topics as time permits. Prerequisite: MATH 223 and MATH 290, or equivalent, or MATH 143. LEC

**MATH 661 Geometry II** (3). N Continuation of Math 660. Prerequisite: MATH 660 or permission of instructor. LEC

**MATH 696 Special Topics:** \_\_\_\_ (1-3). N Arranged as needed to present appropriate material to groups of students. May be repeated for additional credit. Prerequisite: Variable. LEC

**MATH 699 Directed Reading** (1-3). N Directed reading on a topic chosen by the student with the advice of an instructor. May be repeated for additional credit. Consent of the department required for enrollment. IND

**MATH 701 Topics in Mathematics for Teachers:** \_\_\_\_ (1-6).

**MATH 715 Sampling Techniques** (3).

**MATH 717 Nonparametric Statistics** (3).

**MATH 722 Mathematical Logic** (3).

**MATH 724 Combinatorial Mathematics** (3).

**MATH 725 Graph Theory** (3).

**MATH 727 Probability Theory** (3).

**MATH 728 Statistical Theory** (3).

**MATH 735 Introduction to Optimal Control Theory** (3).

**MATH 740 Number Theory** (3).

**MATH 750 Stochastic Adaptive Control** (3).

**MATH 765 Introduction to the Theory of Functions I** (3).

**MATH 766 Introduction to the Theory of Functions II** (3).

**MATH 780 Numerical Analysis of Linear Systems** (3).

**MATH 781 Numerical Analysis I** (3).

**MATH 782 Numerical Analysis II** (3).

**MATH 783 Applied Numerical Methods for Partial Differential Equations** (3).

**MATH 790 Linear Algebra II** (3).

**MATH 791 Modern Algebra I** (3).

**MATH 792 Modern Algebra II** (3).

**MATH 796 Special Topics:** \_\_\_\_ (1-3).

**MATH 799 Directed Readings** (1-3).

### Medical Professions

See Premedical Professions in this chapter of the catalog.

### Meteorology

See Atmospheric Science in this chapter of the catalog.

### Microbiology

B.A. and B.S. degrees in microbiology are offered by KU Undergraduate Biology Program. See Biology Undergraduate Program in this chapter of the catalog.

### Molecular Biosciences

Chair: Kathy Suprenant, [ksupre@ku.edu](mailto:ksupre@ku.edu)

Haworth Hall, 1200 Sunnyside Ave, Room 2034

Lawrence, KS 66045-7534, [www.molecularbiosciences.ku.edu](http://www.molecularbiosciences.ku.edu)

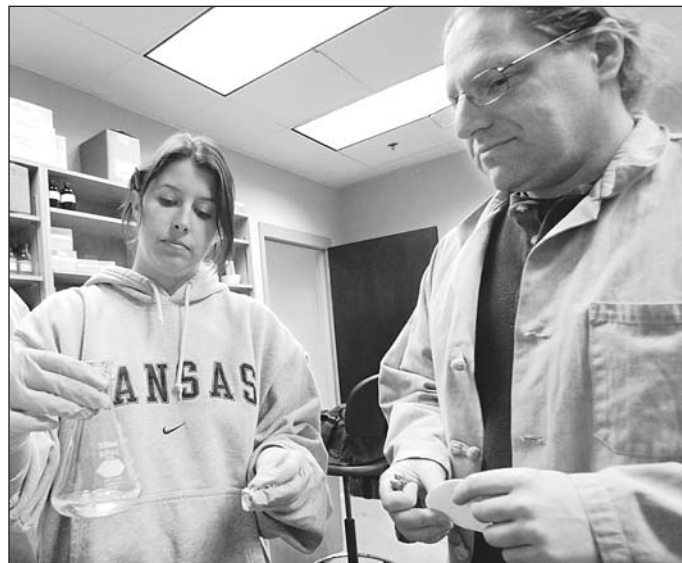
M.A. and Ph.D. degrees are offered in biochemistry and biophysics; microbiology; and molecular, cellular, and developmental biology. The B.S. degree in molecular biosciences is offered on the KU Edwards Campus. See Biology Undergraduate Program in this chapter of the catalog.

### Music

See the School of Fine Arts chapter of this catalog.

### Neurobiology

Students may concentrate in neurobiology by seeking a B.S. degree in biology. See Biology Undergraduate Program in this chapter of the catalog.



### Norwegian

See Germanic Languages and Literatures in this chapter of the catalog.

### Optometry (Preoptometry Study)

See Premedical Professions in this chapter of the catalog.

### Organismal Biology

Students may concentrate in organismal biology by seeking a B.S. degree in biology. See Biology Undergraduate Program in this chapter of the catalog.

### Paleontology

Students may concentrate in paleontology by seeking a B.A. or B.S. degree in biology or a B.S. in geology. See Biology Undergraduate Program; see Geology in this chapter of the catalog.

### Peace and Conflict Studies Minor

See Humanities and Western Civilization in this chapter of the catalog.

### Philosophy

Chair: Tom Tuozzo

Wescoe Hall, 1445 Jayhawk Blvd., Room 3090

Lawrence, KS 66045-7590, [www.philosophy.ku.edu](http://www.philosophy.ku.edu), (785) 864-3976

Degrees offered: B.A., B.G.S., M.A., M.A./J.D., Ph.D.

**Why study philosophy?** Because the unexamined life is not worth living.

The department offers a wide range of courses in philosophy, both in the main systematic divisions of the subject and in its major historical periods. Philosophy courses are often suitable not only for majors but also for students whose main interests lie in other areas. Many philosophy courses satisfy requirements in other degree programs in the College and professional schools.

### Argument and Reason Requirement

PHIL 148 and PHIL 310 each meet the College argument and reason requirement for the B.A. and B.G.S. degrees.

**Interdisciplinary Course Work**

The department offers courses in applied ethics, ethics, feminism, logic, and the philosophy of science to fit the needs and interests of nonmajors. Many of these may be taken without prerequisites. The nonmajor may wish to supplement work in other fields or schools with a series of related courses in philosophy. Some suggested programs to be supplemented with this type of interdisciplinary course work are business, prelaw, premedicine, and engineering; classics, fine arts, art history, and literature; and natural sciences and mathematics. Lists of philosophy courses relating to these areas are available. Consult the director of undergraduate studies.

**Majors**

**First- and Second-year Preparation.** Although majors are not required to take courses in philosophy in their first two years, the department recommends that they do so. PHIL 310, PHIL 384, PHIL 386, and PHIL 388 are required, are prerequisites for upper-division work, and should be taken early. Prospective majors should consult the department early to plan their course work.

**Requirements for the B.A. or B.G.S. Major.** Philosophy majors must take at least 27 hours of course work in philosophy. At least 12 of these hours must be in courses numbered 500 or above. The following courses must be included:

- 1. History of Philosophy** (6 hours)
  - PHIL 384 Ancient Philosophy ..... 3
  - PHIL 386 Modern Philosophy from Descartes to Kant ..... 3
- 2. Symbolic Logic** (3 hours)
  - One of the following: ..... 3
  - PHIL 310 Introduction to Symbolic Logic (3)
  - PHIL 610 Symbolic Logic (3)
- 3. Value Theory** (3 hours)
  - One of the following: ..... 3
  - PHIL 555 Justice and Economic Systems (3)
  - PHIL 662 Aesthetics (3)
  - PHIL 668 Political Philosophy (3)
  - PHIL 670 Contemporary Ethical Theory (3)
  - PHIL 672 History of Ethics (3)
- 4. Metaphysics or Theory of Knowledge or Philosophy of Language or Philosophy of Mind** (3 hours)
  - One of the following: ..... 3
  - PHIL 638 Philosophy of Language (3)
  - PHIL 648 Theory of Knowledge (3)
  - PHIL 650 Metaphysics (3)
  - PHIL 654 Philosophy of Mind (3)
- 5. Nineteenth-/Twentieth-century Philosophy** (6 hours)
  - PHIL 388 Analytic Philosophy: Frege to Quine ..... 3
  - One course from those numbered PHIL 560-PHIL 592 ..... 3

**Requirements for the Minor.** Students must complete 18 hours of philosophy courses, of which 12 must be in courses numbered 300 or above, with 9 of these 12 having been taken at KU. PHIL 384 and especially PHIL 386 are strongly recommended.

**Honors.** To graduate with departmental honors, students must satisfy the requirements above and must take 6 additional hours in philosophy, for a total of 33 hours, including (1) an additional course numbered 500 or above for a total of at least 15 hours at that level and (2) PHIL 499 Senior Essay. A committee of three faculty members reads the finished essay, gives the candidate an oral examination over the essay, and determines whether it warrants honors. This committee must consist of the instructor in PHIL 499, the departmental honors coordinator, and a third

member of the philosophy faculty. Honors are not awarded to anyone who receives a grade lower than B in PHIL 499, whose final grade-point average in philosophy is lower than 3.5, or whose final KU or cumulative grade-point average is lower than 3.25. To be eligible for departmental honors, students must file a declaration of intent with the departmental honors coordinator no later than enrollment for the final undergraduate semester.

The most important element in departmental honors is the honors essay. Once a student has determined the area in which he or she wishes to work, he or she should arrange to write the essay under the guidance of a faculty member with appropriate expertise. Ideally, this work should be completed during a single semester. However, students often find it difficult to complete the essay in one semester. Therefore, we recommend that the essay be begun in the semester before the one in which the student intends to graduate (typically, in the fall semester of the senior year).

The honors essay should be intermediate between a master's thesis and a term paper. It should normally be at least 20 pages (6,000 words) long. It should go beyond mere exposition, whether by criticism or by comparison of different works. Interpretations of rare or difficult texts may occasionally be accepted.

**Philosophy Courses**

- PHIL 140 Introduction to Philosophy** (3). HR H An introductory examination, based primarily on writings of major philosophers, of such central philosophical problems as religious belief, the mind and its place in nature, freedom and determinism, morality, and the nature and kinds of human knowledge. LEC
- PHIL 141 Introduction to Philosophy Honors** (3). HR H An introductory examination, based primarily on writings of major philosophers, of such central philosophical problems as religious belief, the mind and its place in nature, freedom and determinism, morality, and the nature and kinds of human knowledge. Prerequisite: Open only to students in the University Honors Program or by consent of department. LEC
- PHIL 148 Reason and Argument** (3). H An introduction to the theory and practice of logical analysis. Special emphasis is placed upon the logical appraisal of everyday arguments. LEC
- PHIL 160 Introduction to Ethics** (3). HR H An introductory study of the nature of morality and of philosophical bases for the assessment of actions, agents, and institutions. Special emphasis will be placed upon the views of such important philosophers as Aristotle, Hume, Kant, and Mill. Some attention will be paid to applications of moral theory to practice. LEC
- PHIL 161 Introduction to Ethics Honors** (3). HR H An introductory study of the nature of morality and of philosophical bases for the assessment of actions, agents, and institutions. Special emphasis will be placed upon the views of such important philosophers as Aristotle, Hume, Kant, and Mill. Some attention will be paid to applications of moral theory to practice. Prerequisite: Open only to students in the University Honors Program or by consent of department. LEC
- PHIL 180 Introduction to Social and Political Philosophy** (3). HR H An introductory study, based primarily on classic philosophical texts, of such central issues as the justification of governmental authority, the social sources of power, the nature of a just distribution of social resources, competing conceptions of human nature, and the proper limits of governmental interference with individual liberty. LEC
- PHIL 181 Introduction to Social and Political Philosophy, Honors** (3). HR H An introductory study, based primarily on classic philosophical texts, of such central issues as the justification of governmental authority, the social sources of power, the nature of a just distribution of social resources, competing conceptions of human nature, and the proper limits of governmental interference with individual liberty. Prerequisite: Open only to students in the University Honors Program or by consent of department. LEC
- PHIL 200 Study Abroad Topics in Philosophy:** \_\_\_\_ (1-6). H This course is designed for the study of special topics in Philosophy. Course work must be arranged through the Office of KU Study Abroad. May be repeated for credit if content varies. LEC
- PHIL 310 Introduction to Symbolic Logic** (3). H An introduction to the theory and practice of elementary symbolic logic. Special emphasis will be placed upon the logical analysis of mathematical proof and upon a proof of the consistency of elementary logic. LEC
- PHIL 320 Philosophical Issues in the Life Sciences** (3). HR H A philosophical analysis of theoretical and ethical issues that arise in the practice of the life sciences. Discusses the conceptual foundation of the life sciences—evolutionary theory and genetics. Critically

**Philosophy offers courses in applied ethics, ethics, feminism, logic, and the philosophy of science to fit the needs and interests of nonmajors.**

**The undergraduate philosophy club sponsors meetings and social events for students.**

explores the use of statistical and non-human-animal models. Examines ethical issues including problems that arise in human and other animal experimentation, obligations to the environment, proper use of patents, and conflicts in professional duties. LEC

**PHIL 350 Philosophical Issues in Religion** (3). H This course will consider, from a philosophical perspective, some of the problems in religion which arise in the development of "Natural Theology" broadly conceived. (Same as REL 380.) LEC

**PHIL 360 Moral Issues in Business** (3). H After a brief survey of techniques of moral argument and analysis, particular moral issues related to business will be discussed. These will include such topics as advertising, conflict of interest, personal and corporate responsibility, codes of conduct, private property, strikes, just wage, and the tension between moral ideals and business pressures. LEC

**PHIL 365 Moral Issues in the Professions** (3). H An analysis of the nature and justification of standards of professional conduct. Issues of professional behavior that concern more than one profession such as fidelity to a client's interests, candor, confidentiality, obligations to human research subjects, obligations to uphold professional standards, professional strikes, and affirmative action will be discussed. LEC

**PHIL 370 Moral Issues in Medicine** (3). H After a brief survey of techniques of moral argument and analysis, particular moral issues related to medicine will be discussed. The justification and limits of some roles of professional conduct that deal with such matters as confidentiality, truth-telling, and protection of medical research subjects will be considered. Issues relating to death and dying in medicine such as abortion, euthanasia, and the refusal of life-saving medical therapy also will be discussed. LEC

**PHIL 375 Moral Issues in Computer Technology** (3). H After surveying the nature of ethics and morality and learning some standard techniques of moral argumentation, we shall examine such topics as: property and ownership rights in computer programs and software; privacy in computer entry and records; responsibility for computer use and failure; the "big brother" syndrome made possible by extensive personal data banks; censorship and the world-wide web; computer illiteracy and social displacement; and ethical limits to computer research. Prerequisite: EECS 133, EECS 168, EECS 258, or equivalent course. LEC

**PHIL 380 Environmental Ethics** (3). H After a brief survey of techniques of moral argument and analysis, particular moral issues related to the environment will be discussed. These will include such topics (one of which may be dealt with in depth) as animal rights, rights of future generations, wilderness preservation, population control, endangered species, and economics and public policy. Prerequisite: EVRN 148 or consent of instructor. LEC

**PHIL 381 Feminism and Philosophy** (3). H An examination of topics of philosophical interest that are important in the feminist movement such as the nature of sexism, the concept of sexual equality, the ethics of sexual behavior, the nature of love, feminist analyses of the value of marriage and family, the ethics of abortion, and justifications for preferential treatment of women. (Same as WS 381.) LEC

**PHIL 384 Ancient Philosophy** (3). HR H A survey of the thought of the principal philosophers of ancient Greece, with emphasis on the pre-Socratics, Plato, and Aristotle. LEC

**PHIL 386 Modern Philosophy from Descartes to Kant** (3). HR H A survey of the writings of such principal philosophers of the modern period as Descartes, Spinoza, Leibniz, Hobbes, Locke, Berkeley, Hume, and Kant. LEC

**PHIL 388 Analytic Philosophy: Frege to Quine** (3). H An introduction to the principal figures in the philosophical tradition that forms the background to contemporary investigations in analytic philosophy of language. Particular attention will be paid to Frege, Russell, Wittgenstein, and Quine. Prerequisite: PHIL 310 or equivalent, or PHIL 310 may be taken concurrently. LEC

**PHIL 418 Introduction to Cognitive Science** (3). S Examines the data and methodologies of the disciplines that comprise Cognitive Science, an inter-disciplinary approach to studying the mind and brain. Topics may include: consciousness, artificial intelligence, linguistics, education and instruction, neural networks, philosophy, psychology, anthropology, evolutionary theory, cognitive neuroscience, human-computer interaction, and robotics. (Same as LING 418, PSYC 418, and SPLH 418.) Prerequisite: Consent of instructor. LEC

**PHIL 499 Senior Essay** (3). H This course is required, in addition to regular major requirements, of those students wishing to work for departmental honors in Philosophy. Students wishing to enroll should first speak with the departmental adviser for majors. Prerequisite: Open to senior majors in Philosophy by consent of instructor. IND

**PHIL 500 Studies in Philosophy:** \_\_\_\_ (1-6). H (Topic, instructor, and specific prerequisite to be announced in Schedule of Classes.) A study of particular philosophical problems or thinkers not covered by other courses. The course may be offered concurrently by different instructors under different subtitles, and may, with the consent of the chair, be taken more than once if content varies. LEC

**PHIL 504 Philosophy of Sex and Love** (3). H A discussion of philosophical issues such as the relation between love, autonomy, and friendship; heterosexual and homosexual relationships; marriage and adultery; rape and sexual harassment; prostitution; and pornography. LEC

**PHIL 506 Chinese Thought** (3). NW H/W A survey of the principal modes of Chinese thought from their origins through the imperial period. Not open to students with credit in EALC 132. (Same as EALC 642 and HWC 524.) Prerequisite: Eastern Civilization course, or a course in Asian history, or a distribution course in Philosophy. LEC

**PHIL 508 Early Greek Philosophy** (3). H/W A study of the doctrines of Greek philosophy before Plato. Emphasis on the Pre-Socratic philosophers, with some attention paid to the Sophists and the Hippocratic corpus. (Same as GRK 508.) Prerequisite: PHIL 288 or GRK 301, or GRK 302 or GRK 303 and GRK 310 or GRK 312, or permission of instructor. LEC

**PHIL 555 Justice and Economic Systems** (3). H An examination of important representative theories of the justness of an economic system, with particular attention paid to such institutions as private property, a market economy, means and relationships of production, and principles of distribution to individuals. The theorists under consideration include Locke, Adam Smith, Marx and Engels, contemporary utilitarians, Rawls, and Nozick. Prerequisite: A course in ethics or an introductory course in economics or in business. LEC

**PHIL 560 Nineteenth-century Philosophy** (3). H The development of philosophy in the 19th century. Special attention will be paid to such major figures as Hegel, Kierkegaard, Marx, Nietzsche, and Mill. Prerequisite: PHIL 386. LEC

**PHIL 562 Kierkegaard** (3). H A study of the thought of Soren Kierkegaard through examination of some of his major writings. Some attention is given to his influence on the development of existentialist philosophies. Prerequisite: PHIL 384 or PHIL 386. LEC

**PHIL 570 Nietzsche** (3). H A study of Nietzsche's major writings and ideas, with some attention to his philosophical influence. Prerequisite: PHIL 384 or PHIL 386 or permission of instructor. LEC

**PHIL 580 Marxism** (3). H/W A philosophical study of the classical texts of Marxism and of their contemporary development. Prerequisite: A course in philosophy or a course in political science. LEC

**PHIL 582 Existentialism** (3). H/W A study of the main themes and leading philosophers of the existentialist movement. Prerequisite: Two courses in philosophy. LEC

**PHIL 590 Phenomenology** (3). H A study of the main themes and leading philosophers of the phenomenological movement. Prerequisite: PHIL 386. LEC

**PHIL 592 Contemporary Continental Philosophy** (3). H A study of hermeneutics, poststructuralism, and critical theory. Prerequisite: PHIL 386. LEC

**PHIL 600 Readings in Philosophy:** \_\_\_\_ (1-6). H Individual reading on topics not covered in course work. Prerequisite: Consent of instructor. IND

**PHIL 605 The Philosophy of Plato** (3). H A survey of the major works of Plato, with attention both to Plato's distinctive arguments and positions in the major areas of philosophy and to the distinctive literary form in which Plato presents his thinking. Prerequisite: PHIL 384. LEC

**PHIL 607 The Philosophy of Aristotle** (3). H A survey of the major works of Aristotle, with the aim of understanding Aristotle's distinctive formulations of central philosophical questions, the arguments he presents for his answers to those questions, and the systematic interconnections between his positions in the different areas of philosophy. Prerequisite: PHIL 384. LEC

**PHIL 608 Hellenistic Philosophy** (3). H Survey of Stoicism, Epicureanism, and Scepticism from their beginnings through the second century A.D. Prerequisite: PHIL 384 and another course in philosophy. LEC

**PHIL 610 Symbolic Logic** (3). H Propositional calculus, predicate calculus, consistency, decidability of formal systems, the paradoxes and number concept will be covered. (Counts either toward meeting the humanities distribution requirement or toward fulfillment of the mathematics-logic requirement for pre-fall 1987 and B.G.S. general education requirements.) LEC

**PHIL 611 Topics in Symbolic Logic:** \_\_\_\_ (1-3). H This course is a workshop in any of a variety of topics in symbolic logic of special importance to contemporary analytic philosophy, such as modal logic, tense logic, axiomatic set theory, Goedel's theorems, model theory, etc. May be repeated for credit as topics vary. Prerequisite: PHIL 310. LEC

**PHIL 620 Philosophy of Natural Science** (3). H An examination of conceptual and foundational issues in the natural sciences. Topics may include the methodology of science (the nature and status of laws, the precise way in which experiment contributes to theory) and puzzles concerning the content of science (the status of space and time, the problematic nature of quantum mechanics). Prerequisite: PHIL 310 or PHIL 610, or permission of instructor. LEC

**PHIL 622 Philosophy of Social Science** (3). H A critical examination of the methods, concepts, and practices of the social sciences. Topics to be considered may include: theories of explanation, methodological individualism vs. holism, objectivity, the role of rationality, myth and the unconscious in the explanation of behavior, and the value neutrality of science. Prerequisite: One previous course in philosophy, or permission of instructor. LEC

**KU has had seven Dwight Eisenhower/Clifford Roberts Fellows since the program was established in 1985.**

**PHIL 628 Philosophy of Logic** (3). H A systematic treatment of logical theory. Different types of logic will be studied along with their philosophical assumptions, motivations, implications, and uses. Prerequisite: PHIL 310 or PHIL 610. LEC

**PHIL 630 Philosophy of Mathematics** (3). H An examination of varying conceptions of the role and status of mathematical arguments. Topics may include realism/anti-realism, the consequences of Goedel's Incompleteness Theorems, the role of mathematics in the sciences, and an examination of such historical thinkers as Plato, Frege, Russell, Wittgenstein, Goedel, and Hilbert. Prerequisite: PHIL 310 or PHIL 610, or permission of instructor. LEC

**PHIL 638 Philosophy of Language** (3). H An examination of the nature of language using the methods of analytic philosophy. Topics may include meaning, truth, reference, language and thought, and the nature of linguistic rules. Prerequisite: PHIL 388 or permission of instructor. LEC

**PHIL 648 Theory of Knowledge** (3). H An examination of the nature of knowledge. Topics may include the concept of knowledge, knowledge of the external world, induction, theories of justification, and scientific knowledge. Prerequisite: PHIL 384 and PHIL 386, PHIL 388 (which may be taken concurrently), or permission of instructor. LEC

**PHIL 650 Metaphysics** (3). H An examination of some of the central issues in metaphysics. Topics may include causation, the mind-body problem, free will and determinism, modality, natural kinds, the nature of properties, and personal identity. Prerequisite: PHIL 384 and PHIL 386, PHIL 388 (which may be taken concurrently), or permission of instructor. LEC

**PHIL 654 Philosophy of Mind** (3). H An examination of the nature of mind using the methods of analytic philosophy. Topics may include consciousness, perception, propositional attitudes, thought and language, action and intention, mind and body, the prospects for scientific psychology, and personal identity. Prerequisite: PHIL 388 or permission of instructor. LEC

**PHIL 662 Aesthetics** (3). H A study of some of the central themes and problems in aesthetics, such as the beautiful and the sublime in nature and the arts. Prerequisite: Two courses in philosophy or graduate standing. LEC

**PHIL 666 Rational Choice Theory** (3). H This course is an introduction to the philosophical issues surrounding individual decision theory, game theory, and social choice theory. This includes issues of scientific theory selection, the nature of preference, the uses of games to model social interaction, and the ethical and political implications of Arrow's impossibility theorem. Formal techniques of modeling and proof, akin to those used in logic and mathematics, will be used in much of the course. Prerequisite: Two courses in economics, a philosophy course numbered 500 or above, or consent of instructor. LEC

**PHIL 668 Political Philosophy** (3). H A systematic analysis of the concepts of politics, with reference to representative political theories. Prerequisite: A course in philosophy and a course in political science. LEC

**PHIL 670 Contemporary Ethical Theory** (3). H An examination of some major moral philosophers and some important issues in ethical theory since the beginning of the twentieth century. Topics covered typically include intuitionism, emotivism, utilitarianism, virtue ethics, and the relationship between morality and rationality. Prerequisite: PHIL 160 or two courses in philosophy. LEC

**PHIL 671 Feminist Theories in Ethics** (3). H This course addresses the role (if any) that gender plays in constructing ethical theories. Topics include the impact of culture, affect, and the body on our understanding of gender differences and the importance of these differences for ethics. Prerequisite: PHIL 160 or PHIL 161, or two previous philosophy courses. LEC

**PHIL 672 History of Ethics** (3). H An examination of the central ethical texts of Aristotle, Hume, and Kant, supplemented by consideration of either Mill's Utilitarianism or Sidgwick's Methods of Ethics. Emphasis will be on development of exegetical as well as argumentative and analytic skills. Prerequisite: PHIL 160 or PHIL 161 or two previous philosophy courses. LEC

**PHIL 674 Philosophy of Law** (3). H An examination of the concept of law and of legal reasoning. In addition, the course may consider such topics as natural law, legal excuses, the relations between law and morality, civil disobedience, civil liberties, the concept of property. Prerequisite: Two courses in philosophy or one course in philosophy and one course in law or consent of instructor. LEC

**PHIL 676 Medical Ethics: Life and Death Issues** (3). H After a brief survey of techniques of moral argument and analysis especially as they pertain to the moral impermissibility of murder, particular moral and conceptual issues relating to death and dying in medical contexts will be addressed. Topics such as abortion, infanticide, suicide, euthanasia, the definition of death, and the right to refuse life-saving medical therapy will be included. Prerequisite: Two courses in biology or consent of instructor. LEC

**PHIL 677 Medical Ethics: Professional Responsibilities** (3). H After a brief survey of techniques of moral argument and analysis, particular moral issues related to the obligations of health care professionals and the rights of patients will be discussed. These will include such matters as confidentiality, truth-telling, informed consent, the ethics of research on human subjects, psychosurgery, the rights of the mentally ill, and the rights of the mentally retarded. Prerequisite: Two courses in biology or consent of instructor. LEC

**PHIL 684 Main Currents of Russian Thought I** (3). H/W A study of philosophical, theological and literary monuments designed to acquaint the student with the main cultural forces that have shaped Russian thought and manners. From the origins to Napoleonic times. (Same as SLAV 684.) LEC

**PHIL 686 Main Currents of Russian Thought II** (3). H/W A continuation of SLAV 684 from the age of Pushkin to the present. (Same as SLAV 686.) LEC

## Physics

(Offered within the Department of Physics and Astronomy)

Chair: Stephen J. Sanders

Associate Chair: Philip S. Baringer

Malott Hall, 1251 Wescoe Hall Dr., Room 1082

Lawrence, KS 66045-7582, [www.physics.ku.edu](http://www.physics.ku.edu), (785) 864-4626

Degrees offered: B.A. and B.S. in Physics, B.S. in Engineering Physics, M.S. and Ph.D. in Physics

**Why study physics?** Because understanding the physical universe starts here.

The physics curriculum includes course work for those who want a sound background in physics as part of their general education, for those who study physics as part of their training in other fields, and for those whose post-graduate plans include research or employment in physics or related fields.

### Courses for Nonmajors

PHSX 111 provides a general introduction to important physics topics and is taught at a level using basic algebra. The department offers two introductory physics sequences that include laboratory work. PHSX 114 and PHSX 115 cover the major fields of physics without calculus. PHSX 211 and PHSX 212 provide a calculus-based foundation in physics for students in physical science, engineering, and mathematics. PHSX 313 and the laboratory course, PHSX 316, provide an introduction to modern physics for majors in physics and some engineering and physical science programs. Students in biological sciences, health sciences, physical sciences, mathematics, engineering, and prospective elementary and secondary teachers should see appropriate chapters of this catalog and major advisers for guidance about required physics course work. Chemistry majors should note that PHSX 211 and PHSX 212 are prerequisites to advanced work in chemistry.

### Majors

Students considering a major in physics (especially those considering a B.S.) should confer early with a departmental representative about selection of courses. The B.A. degree is appropriate for students who want a general education in physics as part of a broadly structured liberal education. A B.A. with a concentration in computational physics is available. The B.S. is more specialized and is designed as preparation for a professional career or graduate work in physics or related fields. 124 credit hours are required for graduation. The B.S. in engineering physics is an interdisciplinary degree combining physics and one or more engineering disciplines. See the School of Engineering chapter of this catalog for further information.

**First- and Second-year Preparation.** All major programs in physics, astronomy, and engineering physics share requirements in basic physics and mathematics including PHSX 150, a seminar course for majors. Completion of MATH 121 and MATH 122 in the first year allows students to start calculus-based physics foundation courses (PHSX 211 or PHSX 213, followed by PHSX 212 or PHSX 214) by the second semester. Majors are encouraged to take PHSX 213 and PHSX 214, the honors versions of PHSX 211 and PHSX 212. Additional course work in mathematics (MATH 223, MATH 290, and MATH 320), as well as PHSX 313 and PHSX 316, normally is completed in the second year for B.S. and B.A. majors.

### Requirements for the B.A. Major

**Foundational Physics and Mathematics** (18.5 hours)

PHSX 150 Seminar in Physics, Astronomy, and Engineering Physics .....	0.5
PHSX 211 (or PHSX 213) and PHSX 212 (or PHSX 214) General Physics I and II ...	8
MATH 121 and MATH 122 Calculus I and II .....	10
CHEM 184 is recommended. Some courses require MATH 223 and MATH 290 and MATH 220 or MATH 320 as prerequisites. Other requirements follow the general education requirements for B.A. degrees in the College of Liberal Arts and Sciences.	