

Descriptions — Philosophy

of

Courses

- 428. Special Topics in Existentialism**
Spring. 4(4-0) PHL 323 or approval of department.
An examination of existentialist thought in terms of a single author or topic.
- 431. Modern Ethical Theories**
Fall. 4(4-0) 3 credits in philosophy at the 300 level or higher or approval of department.
Study of some of the important writers and problems in moral philosophy since the seventeenth century.
- 432. Contemporary Ethical Theories**
Winter. 4(4-0) PHL 431 or 9 credits in philosophy or approval of department.
Study of some of the leading contemporary views of the nature of moral language and consciousness.
- 434. Aesthetic Theory and Modernism**
Fall. 4(4-0) Juniors. Interdepartmental with History of Art, Linguistics and Oriental and African Languages, Romance Languages, the Department of English, and the School of Music.
Problems, assumptions, and arguments of modern aesthetic theory examined in the context of debates over modernity and modernist artistic practice.
- 436. Philosophical Logic**
Winter. 4(4-0) May reenroll for a maximum of 8 credits if different topic is taken. PHL 337 or approval of department.
Such topics as metatheory, model theory, artificial intelligence and deviant logics, e.g., logic of existence, intuitionist logic, many valued logic.
- 440. Epistemology**
Fall of even-numbered years. 4(4-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or approval of department.
Study of evidence, grounds of assent, conviction, belief, and certainty.
- 445. Metaphysics**
Fall of odd-numbered years. 4(4-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or approval of department.
Fundamental concepts and categories in metaphysics: substance, process, cause, universal, particular, space, time, endurance, eternity, change, and value.
- 447. Philosophy of Mind**
Winter, Spring. 4(4-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or approval of department.
Examines classical and contemporary treatments of such concepts as "mind", "self", "intentionality", "mental act", and associated problems (the body-mind relation, "thinking" machines, the connection of thought with action, etc.).
- 450. Introduction to Cognitive Science**
Winter. 4(4-0) PHL 447 or PSY 300 or LIN 401 or CPS 441 or approval of department. Interdepartmental with Linguistics and the Department of Psychology.
The cognitive processing of information by animals, humans, and computers. Relevant issues in philosophy, psychology, linguistics, neurophysiology, and artificial intelligence.
- 460. Moral and Political Issues**
Fall, Spring. 4(4-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy, or approval of department.
Philosophical aspects of such issues as freedom of speech and action, civil disobedience, violence, war, justice and equality, human rights and punishment.
- 480. The Nature of Scientific Theory and Explanation**
Winter. 4(4-0) PHL 337 or approval of department.
Topics such as: the logical structure of scientific theories, empirical meaningfulness and testability, deductive and probabilistic explanation, prediction.
- 481. Foundations of Scientific Inference**
Spring. 4(4-0) PHL 337 or approval of department.
Topics such as: discovery vs. validation of theories, probability, induction and confirmation theory.
- 484. Philosophy of Biological Sciences**
Spring. 4(4-0) Nine credits in science or approval of department. Interdepartmental with and administered by Lyman Briggs School.
Methodological notions and problems of the biological sciences such as: observation and measurement, classification, teleological and functional explanation, teleological systems, emergentism, vitalism, value neutrality.
- 485. Philosophy of the Social Sciences**
Spring. 4(4-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or 9 credits, other than basics, in social science or approval of department.
Selected problems in the methodology of the behavioral sciences, including such topics as: concept formation and theory construction, explanation and insight, subjectivity and value judgements, emergence and teleology, historicism, reductionism, measurement, and statistical inference.
- 490. Individual Reading**
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Supervised reading on a particular author or topic.
- 494. Special Topics (MTC)**
Fall, Winter, Spring. 2(2-0) to 6(6-0) May reenroll for a maximum of 12 credits if different topics are taken. Approval of department.
Intensive study of some particular problem or author in philosophy.
- 495. Proseminar**
Winter, Spring. 1 credit. May reenroll for a maximum of 4 credits. Juniors. Fifteen credits in philosophy or approval of instructor.
Each section will examine a particular topic or author. Emphasis on discussion of student papers.
- 805. Business Ethics**
Spring. 4(4-0) Graduate student in the College of Business or approval of instructor. Interdepartmental with General Business—Business Law Programs.
Ethical dimensions of such topics as corporate responsibility, preferential hiring, profit and taxation, deception and bribery, self-regulation versus government regulation, "whistleblowing", and advertising. Readings from philosophical and business sources.
- 825. Seminar in the History of Philosophy**
Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 830. Seminar in Ethics**
Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 837. Seminar in Logic**
Fall. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 841. Seminar in Epistemology**
Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 845. Seminar in Metaphysics**
Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 860. Seminar in Social Philosophy**
Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Philosophy of law and of the state.
- 870. Seminar in the Philosophy of Language**
Fall. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Concrete bases of language and nature of meaning.
- 880. Seminar in Philosophy of Science**
Fall, Winter. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
- 890. Graduate Reading Course**
Fall, Winter, Spring, Summer. 1 to 10 credits. May reenroll for a maximum of 24 credits. Approval of department.
Supervised reading course for advanced graduate students for more thorough investigation of special fields.
- 899. Master's Thesis Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 999. Doctoral Dissertation Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

PHYSICAL SCIENCE PHS

College of Natural Science

The content of 405, as well as the problems course, 890, may vary from term to term. Brochures giving detailed information about individual courses are available in the College of Natural Science and the Office of the Assistant Dean for Lifelong Education. These courses are primarily designed for in-service teachers and interested adults and are offered in off-campus locations.

203. Foundations of Physical Sciences
Fall, Winter, Spring, Summer. 4(3-3)
12 credits of Natural Science.

An introduction to physical science for non-science majors. Emphasis on basic concepts relating to human interaction with the physical environment. Topics selected from physics, chemistry, and the earth and space sciences.

405. Topics in Physical Science

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits if different topic is taken. Approval of department.

Presentation of single topics from the physical sciences by senior faculty and guest lecturers. Topics are selected to facilitate development of strong physical science programs in schools.

890. Problems in Physical Science

Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 15 credits. Bachelor's degree in a physical science.

PHYSICS AND ASTRONOMY

College of Natural Science

Physics

PHY

Introductory physics courses are offered in both the lecture-recitation and the Competency-Based-Instructional (CBI) format. In the latter format the students are carefully guided through each course via written materials with ample consulting time available. Both content and pace of course are flexible to suit student's needs and interests, final grades being based on total amount of material for which student's mastery is certified. The introductory courses may be grouped by the application of two criteria: The interests of the students the courses are designed to serve and the method of instruction employed.

Lecture-Recitation Format

237, 238, 239, three credits each, designed primarily for students with interests in the life and earth sciences. The mathematics prerequisite is credit for or concurrent enrollment in college algebra and trigonometry (MTH 109 or 111).

287, 288, 289, four credits each, designed primarily for students with interest in the physical sciences, mathematics and engineering. The mathematics prerequisite is credit for or concurrent enrollment in calculus III with vectors (MTH 214).

291H, 292H, 293H, four credits each, designed primarily for Physics majors and others with a special interest in Physics. The mathematics prerequisite is credit for or concurrent enrollment in calculus III with vectors (MTH 214), the Honors section recommended.

Competency Based Instructional Format

237B, an alternate way to earn credit in 237; 238B, an alternate way to earn credit in 238; and 239B, an alternate way to earn credit in 239. 281, 282, 283, three credits each, designed for students with interest in the natural sciences, including the life and earth sciences. The mathematics prerequisite in Calculus and Analytic Geometry I (MTH 112).

287A, 288A, 289A, one credit each, to follow 281, 282, 283 to give a four credit per term introductory series. However, 287A may not be taken concurrently with 281, 288A may not be taken concurrently with 282, and 289A may not be taken concurrently with 283.

287B, 288B, 289B, in which the four credit introductory series is covered in one term for each course.

291A, 292A, 293A, one credit each to follow 281, 287A; 282, 288A; 283, 289A or 287, 288, 289 or 287B, 288B, 289B to give a five credit introductory series.

291B, 292B, 293B in which the five credit introductory series is covered in one term for each course.

The courses taught via the two formats may be grouped to give a wide variety of introductory physics courses. The following equivalencies exist:

237, 238, 239 may be taken as 237B, 238, 239.

287, 288, 289 may be taken as 281, 287A; 282, 288A; 283, 289A; or 287B, 288B, 289B.

291B, 292B, 293B may be taken as 281, 287A, 291A; 282, 288A, 292A; 283, 289A, 293A; or as 287, 291A; 288, 292A; 289, 293A; or as 287B, 291A; 288B, 292A; 289B, 293A.

A student may change from one group of introductory courses to another, but may not earn credit for more than one complete sequence. This statement also applies to the Lyman Briggs School Physics courses LBS 162, 261, and 263 except that credit for LBS 162 may be earned in addition to calculus-based introductory physics courses.

Credit may not be earned in more than one course in each of the following groupings (a.-e.):
a. 227, 237, 237B, 281, 287, 287B, 291B, 291H.
b. 238, 238B, 282, 288, 288B, 292B, 292H.
c. 239, 239B, 283, 289, 289B, 293B, 293H.
d. 357, 364, 364B, 391.
e. 365, 365B, 391.

201, 203, 205, 227, 256 and 357 cannot be used to meet the requirements for a major in Physics or Astronomy and Astrophysics.

Prerequisites to nearly all the first courses in the 300-400 level course sequences are stated in terms of the Introductory Physics courses. The course selected for prerequisite is that which requires the least number of credits and the least mathematical background the department considers adequate. The corresponding term of any introductory sequence that requires a mathematical background equal to or greater than that of the stated prerequisite may be substituted for the stated prerequisite.

All 400 level physics courses require 289 or 293H.

201. The Science of Sound I: Rock, Bach and Oscillators (N)

Winter. 4(4-0) Interdepartmental with the Department of Mechanical Engineering.

Production, propagation, detection of sounds. Voice, hearing, scales, timbre, musical instruments. Room acoustics. Electronic reproduction and synthesis of music. Demonstrations emphasized.

203. Science of Light and Color (N)

Spring. 4(4-0)

Wave and particle aspects of electromagnetic radiation. Light sources. Mirrors, lenses, optical instruments, eyes. Atmospheric phenomena. Color mixing and classifications. Human vision. Filters, dyes, pigments, paints. Photography and holography. Demonstrations.

205. Bohr and Einstein: The Concept of Nature in Our Day (N)

(PHY 301.) Fall. 4(4-0)

Basic contemporary ideas about the natural world and their significance presented through study of the lives of Niels Bohr (quantum theory) and Albert Einstein (relativity theory).

227. Physics for Audiology and Speech Sciences

Fall, Spring. 4(4-0) MTH 108. Not open to students with credit in PHY 237. Interdepartmental with the Department of Audiology and Speech Sciences.

Introductory physics for Audiology and Speech Sciences majors: kinematics, Newton's Law, conservation of energy and momentum, waves and vibrations, sound propagation, resonance, speech production.

237. Introductory Physics

Fall, Winter, Spring. 3(4-0) MTH 109 or MTH 111 or concurrently. Not open to students with credit in PHY 227.

Mechanics, including Newton's Law, momentum, energy, and conservation laws.

237B. Introductory Physics I, CBI

Fall, Winter, Spring, Summer. 3 credits. MTH 109 or MTH 111 or concurrently.

Mechanics including Newton's Law, momentum, energy, and conservation laws.

238. Introductory Physics

Fall, Winter, Spring. 3(4-0) PHY 237.

Heat, electricity and magnetism.

238B. Introductory Physics II, CBI

Fall, Winter, Spring, Summer. 3 credits. PHY 237B or PHY 237.

Heat, electricity and magnetism.

239. Introductory Physics

Fall, Winter, Spring. 3(4-0) PHY 238.

Wave motion, sound, light, and modern developments.

239B. Introductory Physics III, CBI

Fall, Winter, Spring, Summer. 3 credits. PHY 238B or PHY 238.

Wave motion, sound, light and modern developments.

256. Energy Consumption and Environmental Quality (N)

Spring. 4(4-0) Interdepartmental with Lyman Briggs School.

The role of energy as a fundamental pollutant will be discussed along with the availability of fossil energy sources. Limitations on the safe utilization of both fossil and nuclear energy will also be considered.

257. Introductory Physics Laboratory

Fall, Winter, Summer. 1(0-2) PHY 237 or PHY 281 or concurrently.

Mechanics and heat.

258. Introductory Physics Laboratory

Winter, Spring, Summer. 1(0-2) PHY 238 or PHY 282 or concurrently.

Heat, electricity and magnetism.

259. Introductory Physics Laboratory

Fall, Spring, Summer. 1(0-2) PHY 239 or PHY 283 or concurrently.

Wave motion, sound, light and modern developments.

281. Basic Physics I, CBI

Fall, Winter, Spring, Summer. 3 credits. MTH 112.

Static equilibrium, Newton's laws, power, harmonic motion, rotational motion.