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 Language, the
Department of English, and the School of
Music. Problems, assumptions, and arguments of mod­
ern 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 6 credits if different topic is taken. PHL 357 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.

450. Moral and Political Issues
Fall, Spring, 4(4-0) Three credits in
philosophy at 300 level or higher or 8 credits in
philosophy, or approval of department.
Philosophical aspects of issues such as freedom
of speech and action, civil disobedience, violence,
war, justice and equality, human rights and
punishment.

450. The Nature of Scientific Theory and Explanation
Winter. 4(4-0) PHL 337 or approval of
department.
Topics such as: logical structure of scientific
theories, empirical meaningfulness and testab­ility,
deductive and probabilistic explanation,
prediction.

451. Foundations of Scientific Inference
Spring. 4(4-0) PHL 337 or approval of
department.
Topics such as: discovery vs. validation of theo­ries,
probabilty, induction and confirmation theory.

454. Philosophy of Biological Sciences
Spring. 4(4-0) Nine credits in science or
approval of department. Interdepartmental
with and administered by Lamont 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.

455. Philosophy of the Social Sciences
Spring. 4(4-0) Three credits in philosophy
at 300 level or higher or 8 credits in philosophy 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.

505. 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. 3 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.

850. Seminar in Social Philosophy
Spring. 3 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, Summer. Variable
credit. Approval of department.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Variable.
credit. Approval of department.

PHYSICAL SCIENCE

College of Natural Science
The content of 405, as well as the problems course, 880, 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 be repeated for a maximum of 6 credits if different topic is taken. Approval of department.
Presentation of single topics from the physical sciences by 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 be repeated 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 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. The course 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, 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 as 287B, 288B, 289B.
291B, 292B, 293B may be taken as 291, 291A; 282, 288A; 283, 293A or as 291B, 292B, 293B.

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 293 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.):

b. 238, 238B, 262, 288, 289B, 292B, 292H.
c. 239, 293B, 283, 289, 292B, 293H.
d. 291, 291B, 301, 302, 305, 277, 291F 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 200-400 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 following are typical 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.

203. Science of Light and Color (N)
Spring. 4(4-0) Interdepartmental with Lyman Briggs School.

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 its 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 110 or MTH 111 or concurrently. Not open to students with credit in PHY 237.
Mechanics, including Newton's Law, momentum, energy, and conservation laws.

237B. Introductory Physics I, CBI
Fall, Winter, Spring, Summer. 3 credits. MTH 108 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. 3 credits. PHY 237B 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 fuels in light of 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 261 or concurrently.
Mechanics and heat.

258. Introductory Physics Laboratory
Winter, Spring. 1(0-2) PHY 282 or concurrently.
Heat, electricity and magnetism.

259. Introductory Physics Laboratory
Fall, Spring. 1(0-2) PHY 219 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.