

821. Advanced General Pharmacology
Winter. 3(2-2) PHM 520, PHM 820;
PHM 521 or concurrently.

This course complements PHM 521 (Pharmacodynamics) with increased coverage of toxicology, chemotherapy (antibiotic, anticancer, and antiparasitic) and central nervous system drugs, including narcotic analgesics and psychoactive agents.

839. Systems Neuroscience

Winter of odd-numbered years. 5(4-2)
Approval of department. Interdepartmental
with the departments of Anatomy, and Physiol-
ogy. Administered by the Department of Anat-
omy.

Physiology, anatomy and pharmacology of sen-
sory, somatomotor and autonomic neural sys-
tems.

**841. Advanced Endocrine Physiology
and Pharmacology**

Fall of odd-numbered years. 5(6-0)
PSL 500E or approval of course coordinator.
Interdepartmental with and administered by
the Department of Physiology.

Basic and advanced physiologic and pharmaco-
logic concepts of general endocrinology includ-
ing reproductive endocrinology.

870. Problems

Fall, Winter, Spring, Summer. 2 to 4
credits. May reenroll for a maximum of 12 cred-
its. Approval of department.

Limited amounts of individual work on selected
research problems for first year graduate stu-
dents in the Department of Pharmacology and
Toxicology.

899. Master's Thesis Research

Fall, Winter, Spring, Summer. Varia-
ble credit. Approval of department.
Individual work on research problems for the
master's degree in pharmacology.

910. Seminar

Fall, Winter, Spring. 1(1-0) May
reenroll for a maximum of 3 credits. Approval of
department.

Discussion of recent topics on pharmacology by
departmental or outside speakers, or reporting
of research efforts by graduate students of the
Department of Pharmacology and Toxicology.

980. Problems

Fall, Winter, Spring, Summer. 2 to 5
credits. May reenroll for a maximum of 20 cred-
its. Approval of department.

Limited work on selected research problems.

999. Doctoral Dissertation Research

Fall, Winter, Spring, Summer. Varia-
ble credit. Approval of department.
Individual work on research problems for the
doctoral degree in pharmacology.

**101. Introduction to Philosophy: Ethics
and Value (A)**

Fall, Winter, Spring, Summer. 3(3-0)
Students may not receive credit for both PHL
101 and PHL 330.

An inquiry into the nature of the right and the
good, addressed to such fundamental problems
as the objectivity of moral judgments, the crite-
ria of right and wrong, and the grounds of moral
responsibility.

**102. Introduction to Philosophy:
Knowledge and Reality (A)**

Fall, Winter, Spring, Summer. 3(3-0)

An examination of such basic philosophical
problems as free will and determinism, the exist-
ence of God, the relation of mind and body, and
the scope and limits of human knowledge.

103. Introduction to Philosophy: Logic

Fall, Winter, Spring, Summer. 3(3-0)

An examination of deductive and inductive rea-
soning and of such topics as rational argumenta-
tion, fallacies, definition, meaning, truth, and
evidence. Designed to improve students' capaci-
ties to read and think critically.

**120. Classics of Philosophical Literature
(A)**

Fall, Winter, Spring. 4(4-0)

An introduction to contrasting classics of literary
and philosophical importance. Primary texts
from such philosophers as Plato, Lucretius, Des-
cartes, Hume, Nietzsche, James, Russell and
Sartre will be read and discussed.

200H. Honors Work

Fall, Winter, Spring. 1 to 16 credits.
Approval of department.

Taken together, PHL 211, PHL 212 and PHL
213 provide a comprehensive introduction to the
history of western philosophy. It is recom-
mended that these courses be taken in sequence.
However, if only one course is taken it may be
any one of these, since each course is self-con-
tained and may be taken independently of the
others.

211. Ancient Philosophy (A)

Fall, Winter, Spring. 3(3-0)

An introduction to the history of philosophy: the
Greek and Roman periods, with emphasis on
Plato and Aristotle.

**212. Medieval and Early Modern
Philosophy (A)**

Winter, Spring. 3(3-0) PHL 211 rec-
ommended.

An introduction to the history of philosophy: the
Middle Ages to the rise of modern science, with
emphasis on Aquinas, Descartes, Spinoza and
Leibniz.

213. Modern Philosophy (A)

Fall, Spring. 3(3-0) PHL 212 rec-
ommended.

An introduction to the history of philosophy: the
Enlightenment to the nineteenth century, with
emphasis on Hume and Kant and such other phi-
losophers as Locke, Berkeley, Hegel, Kierke-
gaard and Nietzsche.

312. Chinese Philosophy

Spring. 3(3-0)

Comparative moral philosophy of Confucian-
ism, Taoism, and Buddhism and their meta-
physical and cultural roots. Concepts of
enlightenment and human nature.

315. American Philosophy

Spring of odd-numbered years. 3(3-0)
Three credits in philosophy or approval of
department.

Examination of such thinkers as Royce, Pierce,
James, Dewey, Whitehead and Santayana, illus-
trating classic American contributions to philoso-
phy.

323. Existentialism

Fall, Winter, Spring. 3(3-0) Three
credits in philosophy or approval of department.

Such authors as Husserl, Jaspers, Kierkegaard,
Marcel, Nietzsche, Sartre and such topics as
hope, anxiety, bad faith, subjectivity, freedom,
social being, and phenomenological method.

330. Elements of Ethics

Fall, Winter, Spring. 3(3-0) Juniors.
Students may not receive credit for both PHL
101 and PHL 330.

An inquiry into the nature of the right and the
good, addressed to such fundamental problems
as the objectivity of moral judgments, the crite-
rion of right and wrong, and the grounds of
moral responsibility.

337. Logic I

Fall, Winter, Spring. 4(4-0)

Modern symbolic methods in deductive reason-
ing. The logic of compound and general sen-
tences.

338. Logic II

Winter, Spring. 4(4-0) PHL 337 or
approval of department.

The logic of identity, functions and definitions.
The axiomatic method and its applications.

**340. Moral Problems in Medicine and
the Life Sciences**

Fall, Winter, Spring. 4(4-0) Juniors.

Philosophical aspects of euthanasia, allocation
of scarce medical resources, experimentation
and informed consent, truth-telling and the doc-
tor-patient relationship, genetic counseling,
genetic engineering, behavior control, and
health care delivery.

341. Philosophical Aspects of Feminism

Fall, Winter, Spring. 4(4-0)

Conceptual issues in feminist theory. Such con-
cepts as oppression, sexism and chauvinism,
feminist separatism, rape, respect and self-
respect, personhood, power and control and
feminism will be analyzed and explored.

342. Philosophy of the Counter Culture

Fall. 3(3-0)

Students will examine counter cultural critiques
of contemporary culture and values; and
develop, articulate, defend their own views on
such issues, especially as those issues immedi-
ately affect their own lives.

343. Ethical Issues in the Social Sciences

Winter. 3(3-0)

Philosophical treatment of ethical issues arising
from the social scientists' conflicting obligations
to their subjects, science, profession, career, per-
sonal values and society.

344. Ethical Issues in Nursing

(PHL 461.) Winter. 2(2-0) PHL 340 or
approval of instructor.

Application of ethical analysis, principles, and
reasoning to such topics as parentalism, truthful-
ness, coercion, confidentiality, and autonomy in
the nursing context.

PHILOSOPHY

PHL

College of Arts and Letters

Each of the courses PHL 101, PHL 102, PHL 103
is an independent gateway to a major area of
philosophy. Together they provide a compre-
hensive introduction to philosophical inquiry.

The courses may be taken independently and
in any order.

Description — Philosophy

of

Courses

345. Business Ethics

Fall. 4(4-0) Juniors. Interdepartmental with General Business—Business Law Programs.

Ethical dimensions of the relationships between a business and employees, consumers, other businesses, society, government, and the law. Readings from philosophical and business sources.

350. Philosophy of Art

Fall, Winter, Spring. 3(3-0) Three credits in philosophy or 6 credits in art, music, or literature.

Inquiry into the principles of artistic activity made with a view to determining the conditions under which art is produced, the nature of its product, and the sources of its value.

355. Philosophy of Religion

Spring. 3(3-0) Three credits in philosophy or 6 credits in religious studies or approval of department.

Alternative philosophical approaches to religion as a personal and/or social phenomenon. Contemporary problems of meaning, evidence and obligation in relation to religious beliefs and practices.

360. Philosophy of Law

Fall, Winter, Spring. 3(3-0) Three credits in philosophy or 6 credits in political science or approval of department.

Philosophical examination of such legal concepts as punishment, responsibility, rights and duties, judicial decisions and justice, and such legal theories as natural law, positivism and realism.

361. Philosophy of Technology

Fall, Winter. 4(4-0) Sophomores or approval of department. Interdepartmental with and administered by Lyman Briggs School.

Is our technology desirable? Are its social forms desirable? What alternatives are there? Students will develop and defend their own appraisals of technology.

365. Social and Political Philosophy

Fall, Winter. 3(3-0) Three credits in philosophy or 6 credits in political science, or approval of department.

Philosophical justifications for political authority and individual liberty. Consideration of such theories as natural law, social contract, utilitarianism and historicism.

366. The Philosophy of Karl Marx

Spring. 4(4-0) Three credits in philosophy or approval of department.

Structural and critical analysis of Karl Marx's philosophical thought. Theory of objectification and alienation; its application to the religious, philosophical, political, social, and economic spheres; reform of the Hegelian dialectic.

370. Philosophy of Language

Fall. 3(3-0) Three credits in philosophy or approval of department.

An elucidation of elementary topics in semantics and philosophy of language, including such topics as meaning, denotation and truth.

380. The Nature of Science

Fall, Winter. 3(3-0) One course in the biological, physical or mathematical sciences.

Conflicting views about science. Such topics as: scientific methodology, the objectivity of science, the presuppositions, goals and limits of science.

381. Science, Values, and Decision Making

Winter, Spring. 3(3-0) One course in the biological, physical or mathematical sciences.

Conflicting views of science and values. Such topics as: the value neutrality of science, science and ideology, science and decision making, the scientific predictability of human actions.

390. Philosophy in Literature (A)

Spring. 3(3-0) Juniors.

Philosophical problems found in such writers as Goethe, Dostoevsky, Tolstoy, Mann, Hesse, Camus.

400H. Honors Work

Fall, Winter, Spring. 1 to 5 credits. May reenroll for a maximum of 10 credits. Approval of department.

Individually selected program of supervised group or individual study dealing with some phase of philosophy.

410. Plato

Fall. 4(4-0) PHL 211 or 9 credits in philosophy or approval of department.

The most important Socratic dialogues, including the "Republic" and the dialogues of the early Academy.

411. Aristotle

Winter. 3(3-0) PHL 211 or PHL 410 or 9 credits in philosophy or approval of department.

Introduction to the philosophy of Aristotle. Readings from the texts of Aristotle and lectures on his philosophy with emphasis on his logical, epistemological and metaphysical inquiries.

412. Aristotle's Moral and Political Philosophy

Spring of even-numbered years. 3(3-0) PHL 211 or PHL 411 or 9 credits in philosophy or approval of department.

Such topics as: happiness as the supreme good; practical virtue and the middle way; morality as rational; political foundations; the social role of women, children, and slaves.

413. Continental Rationalism

Fall of odd-numbered years. 4(4-0) PHL 212 or 9 credits in philosophy or approval of department.

The rationalists of the seventeenth century, with emphasis on Descartes, Spinoza and Leibniz.

414. Medieval Philosophy

Spring of odd-numbered years. 4(4-0) PHL 211 or PHL 212 or PHL 411 or 9 credits in philosophy or approval of department.

Significant philosophers and philosophical problems of the Medieval period.

416. British Empiricism

Fall of even-numbered years. 4(4-0) PHL 212 or PHL 213 or 9 credits in philosophy or approval of department.

The development of the philosophical school of British Empiricism, with emphasis on the writings of Locke, Berkeley, and Hume.

419. Nineteenth Century Philosophy

Fall. 4(4-0) PHL 213 or PHL 423 or 9 credits in philosophy or approval of department.

Significant philosophical developments in 19th century thought, with emphasis on post-Kantian idealism.

420. Twentieth Century Analytic Philosophy

Fall. 4(4-0) Three credits in philosophy at the 300 level or higher or 9 credits in philosophy or approval of department.

Issues in the works of such philosophers as Frege, Moore, Wittgenstein, Carnap, Quine, Goodman, Austin, Strawson, and Kripke.

423. Kant

Winter. 4(4-0) PHL 213 or 9 credits in philosophy or approval of department.

Kant's metaphysical and epistemological system as expressed in the "Critique of Pure Reason."

424. Contemporary Continental Philosophy

Winter. 4(4-0) Three credits of philosophy at the 300 level or higher or approval of department.

Typical areas of study are phenomenology, structuralism, contemporary interpretation of Marx, hermeneutic (Gadamer), critique of instrumental reason (Horkheimer, Adorno, Habermas) ontologies of the person.

427. Hegel

Spring. 4(4-0) PHL 213 or PHL 423 or 9 credits in philosophy or approval of department.

Introduction to Hegel's dialectic and system through selections from major texts. The problem of historically concrete philosophy and implications for science, politics, art, and religion.

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.

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.

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.

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.).

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

Winter, 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, 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 credit. 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.