820. Advanced General Pharmacology
Fall, 3(2-2) PHM 520 or concurrently.
Discussions, demonstrations and laboratories designed to supplement information provided in PHM 520 on the pharmacokinetics and actions of drugs that influence the autonomic and cardiovascular systems.

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, 3(4-2) PSL 801 or approval of course coordinator. Interdepartmental with the departments of Anatomy, and Physiology. Administered by the Department of Physiology. Physiology, anatomy and pharmacology of sensory, somatomotor and autonomic neural systems.

841. Advanced Endocrine Physiology and Pharmacology
Fall of odd-numbered years, 5(6-0) PSL 900E or approval of course coordinator. Interdepartmental with and administered by the Department of Physiology. Basic and advanced physiologic and pharmacologic concepts of general endocrinology including reproductive endocrinology.

870. Problems
Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department. Limited amounts of individual work on selected research problems for the first-year graduate students in the Department of Pharmacology and Toxicology.

899. Master’s Thesis Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department. Individual work on selected 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 in the Department of Pharmacology and Toxicology.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department. Individual work on research problems for the doctoral degree in pharmacology.

PHILOSOPHY

PHL 213. Modern Philosophy (A)
Fall, Spring, 3(3-0) PHL 212 recommended.
An introduction to the history of philosophy: the Enlightenment to the nineteenth century, with emphasis on Hume and Kant and such other philosophers as Locke, Berkeley, Hegel, Kierkegaard and Nietzsche.

PHL 312. Chinese Philosophy
Spring, 3(3-0)
Comparative moral philosophy of Confucianism, Taoism, and Buddhism and their metaphysical and cultural roots. Concepts of enlightenment and human nature.

PHL 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, illustrating classic American contributions to philosophy.

PHL 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.

PHL 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 criteria of right and wrong, and the grounds of moral responsibility.

PHL 337. Logic I
Fall, Winter, Spring, 4(4-0)
Modern symbolic methods in deductive reasoning. The logic of compound and general sentences.

PHL 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.

PHL 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 doctor-patient relationship, genetic counseling, genetic engineering, behavior control, and health care delivery.

PHL 341. Philosophical Aspects of Feminism
Fall, Winter, Spring, 4(4-0)
Conceptual issues in feminist theory. Such concepts 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 immediately affect their own lives.

343. Ethical Issues in the Social Sciences
Winter, 3(3-0)
Philosophical treatment of ethical issues arising from the social sciences; conflicts obligations to their subjects, science, profession, career, personal 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 paternalism, truthfulness, coercion, confidentiality, and autonomy in the nursing context.

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 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.
Philosophic 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.

385. 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, Tosty, Mann, Hesse, Camus.

400H. Honors Work
Fall, Winter, Spring, 1 to 5 credits. May renew 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 in philosophy at 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 (Rorty, 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 dialectical and systematic approach 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 353 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) Three 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.

A-163
Descriptions — Philosophy
of Courses

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.).

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.

471. Philosophy of Mathematics
Spring. 4(4-0) PHL 337 or MTH 471 or approval of department.
An analysis of the nature of mathematical truth. The theses of logicism, formalism, intuitionism, and conventionalism are critically examined.

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 credits if different topic is taken. 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 judgments, emergence and teleology, historicism, reductionism, measurement, and statistical inference.

490. Individual Reading
Fall, Winter, Spring. 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
Fall, Winter, Spring. 2(2-0) to 6(0-0)
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. 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.
Supervised reading course for advanced graduate students for more thorough investigation of special fields.

899. Master's Thesis Research
Fall, Winter, Spring. 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, 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. 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. 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.

431. Problems in Planetarium Education
Fall, Winter, Spring. 1 to 3 credits. May reenroll for a maximum of 6 credits. Approval of department.
Individual study, training, or project under the direction of a faculty member. Often the training will be in the area of actual delivery of planetarium presentations.

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