

319. Principles of Drug-Tissue Interactions
Spring, 3(3-0)
R: Approval of department. Not open to students with credit in PHM 820.
General principles relevant to the interaction of chemicals with biological systems.

320. Drug Actions, Effects and Uses
Fall, 5(5-0)
P: PHM 819. R: Open only to graduate students. Approval of department.
Major principles of physiological and biochemical actions of major drugs.

327. Advanced Neurobiology
Fall, 4(4-0) Interdepartmental with Physiology and Zoology.
Nervous system function at the cellular level: membrane biophysics and potentials, synaptic transmission.

339. Systems Neuroscience
Spring of odd-numbered years. 4(4-0) Interdepartmental with Anatomy and Physiology. Administered by Anatomy.
R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Agriculture and Natural Resources, Natural Science, and Veterinary Medicine.
Anatomy, pharmacology, and physiology of multicellular neural systems. Sensory, motor, autonomic, and chemo-regulatory systems in vertebrate brains.

341. Advanced Endocrine Physiology and Pharmacology
Fall, 4(4-0) Interdepartmental with Physiology, Animal Science, and Psychology. Administered by Physiology.
P: BCH 461, PSL 432. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources.
Basic and advanced concepts of endocrine and reproductive physiology and pharmacology.

370. Research Rotation
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to first year graduate students in Pharmacology and Toxicology. Approval of department.
Individual work on selected research problems.

399. Master's Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate students in Pharmacology and Toxicology. Approval of department.

910. Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course.
R: Open only to graduate students. Approval of department.
Discussion of recent topics in pharmacology and toxicology by faculty or invited outside speakers. Students research reports.

980. Problems
Fall, Spring, Summer. 2 to 5 credits. A student may earn a maximum of 20 credits in all enrollments for this course.
R: Open only to graduate students. Approval of department.
Limited work in selected research projects.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course.
R: Open only to graduate students in Pharmacology and Toxicology. Approval of department.

PHILOSOPHY PHL

Department of Philosophy College of Arts and Letters

130. Logic and Reasoning
Fall, Spring. 3(3-0)
Deductive and inductive reasoning. Topics such as rational argumentation, fallacies, definition, meaning, truth and evidence. Techniques for critical reading and thinking.

200. Introduction to Philosophy
Fall, Spring. 3(3-0)
Theories of knowledge, values, and reality. Topics such as objectivity, relativism and cultural diversity, moral responsibility, aesthetic values, the self, existence of God, free will, minds and machines.

210. History of Western Philosophy: Ancient and Medieval
Fall. 3(3-0)
Greek philosophy with emphasis on Plato and Aristotle; Roman philosophy; and medieval philosophy.

211. History of Western Philosophy: Modern
Spring. 3(3-0)
P: PHL 210 recommended.
Philosophy from the Renaissance through the nineteenth century, with emphasis on such philosophers as Descartes, Spinoza, Locke, Hume, Kant, Hegel, Kierkegaard and Nietzsche.

312. Chinese Philosophy
Spring. 3(3-0)
R: Not open to freshmen and sophomores.
Central traditions in the history of Chinese philosophy: Confucianism, Taoism, Chan Buddhism, Neo-Confucianism.

320. Existentialism
Fall. 3(3-0)
P: One PHL course.
Husserl, Jaspers, Kierkegaard, Marcel, Nietzsche, Sartre, and de Beauvoir. Topics such as hope, anxiety, bad faith, subjectivity, freedom, social being, phenomenological method.

330. Formal Reasoning I
Fall, Spring. 4(4-0)
Formal methods in deductive reasoning. Logic of connectives and quantifiers, including identity, functions, and descriptions.

331. Formal Reasoning II
Spring. 4(4-0)
P: PHL 330.
Axiomatic method. Informal axiomatizations of set theory and probability theory. Metatheory of elementary logic.

340. Ethics
Fall, Spring. 3(3-0)
P: One PHL course.
Inquiry through the writings of some important theorists, their critics and their contemporary followers. Aristotle, Hume, Kant, Mill, Sidgwick.

344. Ethical Issues in Health Care
Fall, Spring. 4(4-0)
R: Not open to freshmen and sophomores.
Termination of treatment, truth-telling, informed consent, human experimentation, reproductive issues, allocation of scarce resources, justice and the health care system.

345. Business Ethics
Fall. 4(4-0)
R: Not open to freshmen and sophomores.
Ethical dimensions of the relationships between a business and employees, consumers, other businesses, society, government, and the law.

347. Aesthetics
Fall. 3(3-0)
P: One course in art or literature or music or philosophy.
Theories of aesthetic value and the nature of art. Works of such aestheticians as Plato, Hume, Kant, Hegel, Tolstoy, Santayana, Wittgenstein, Isenberg, Langer, Murdoch.

350. Moral and Political Issues
Fall. 3(3-0)
P: One PHL course.
Justice, rights and responsibilities. Topics such as equality of opportunity, justice for the aged and future generations, and abortion.

354. Philosophy of Law
Fall, Spring. 3(3-0)
P: One PHL course or two PLS courses.
Legal concepts such as punishment, responsibility, rights and duties, and judicial decisions. Legal theories such as natural law, positivism and realism.

355. Philosophy of Technology
Spring. 4(4-0) Interdepartmental with Lyman Briggs School. Administered by Lyman Briggs School.
R: Not open to freshmen. Open only to students in Lyman Briggs School and the Department of Philosophy. Completion of Tier I writing requirement.
Examination of the desirability of technology, its social forms, and its alternatives. Conventional productivist, ecological progressive, and radical humanist outlooks.

356. Philosophical Aspects of Feminism
Fall, Spring. 4(4-0)
Conceptual and normative issues in feminist theory. Topics such as sexism, oppression, coercion, control, power, equality, personhood, respect and self-respect, rape, separatism, community, intimacy, and autonomy.

357. Philosophy of Karl Marx
Spring. 3(3-0)
P: One PHL course.
Marx's philosophical thought and its bearing on science, religion, art and politics.

360. Philosophy of Language
Spring. 3(3-0)
P: One course in Philosophy.
Elementary topics in semantics, linguistic pragmatics, and philosophy of language. Meaning, denotation, speech acts, and linguistic relativity.

380. Nature of Science
Fall, Spring. 3(3-0)
P: One course in the biological, physical, or mathematical sciences.
Conflicting views about science and values. Such topics as scientific methodology; the objectivity and value neutrality of science; the presuppositions, goals, and limits of science; and science and decision making.

410. Plato
Fall. 4(4-0)
P: PHL 210 or two other Philosophy courses. R: Completion of Tier I writing requirement.
Development of Platonic philosophy from the early Socratic Academy. Emphasis on the middle dialogues, especially the 'Republic'.

411. Aristotle
Spring. 4(4-0)
P: PHL 210 or PHL 410 or two other Philosophy courses.
R: Not open to freshmen and sophomores.
Aristotle's major works and his major contributions to the sciences, metaphysics, ethics, and politics.

**Descriptions —Philosophy
of
Courses**

412. Medieval Philosophy

Fall of even-numbered years. 3(3-0)

P: PHL 210 or two other Philosophy courses. R: Not open to freshmen and sophomores.

Medieval philosophy from the fourth to the sixteenth centuries, emphasizing the contributions of Augustine and Aquinas.

413. Continental Rationalism

Fall of odd-numbered years. 4(4-0)

P: PHL 211 or two other Philosophy courses.

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

414. British Empiricism

Fall of even-numbered years. 3(3-0)

P: PHL 211 or two other Philosophy courses.

The philosophy that strives to trace all our ideas and beliefs, whether in science, morality, or religion, back to their source in experience. Emphasis on the works of Locke, Berkeley, and Hume.

415. Kant

Spring. 4(4-0)

P: PHL 211 or two other Philosophy courses.

Kant's metaphysical and epistemological system, focusing on his 'Critique of Pure Reason'.

416. Hegel

Spring of even-numbered years. 4(4-0)

P: PHL 211 or PHL 415 or three other Philosophy courses.

Hegel's dialectic and its bearing on both the history of philosophy and issues about science, politics, art and religion.

417. 19th Century Philosophy

Fall. 4(4-0)

P: PHL 210 or PHL 211.

Emphasis on attempts to overcome the Kantian limits on human knowledge postulated by Kant. Works by writers such as Fichte, Schopenhauer, Nietzsche, and James.

418. Topics in 20th-Century Analytical Philosophy

Fall. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: One Philosophy course at 300 level or above.

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

420. Topics in 20th-Century Continental Philosophy

Fall. 4(4-0) A student may earn a maximum of 12 credits in all enrollments for this course.

P: 3 credits in Philosophy at 300 level or above.

Recent European movements such as phenomenology, poststructuralism, critical theory, hermeneutics, and philosophical anthropology.

421. Topics in European Philosophy

Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: PHL 320 or PHL 420.

A particular problem, topic, or author in nineteenth- and twentieth-century European philosophy, such as Kierkegaard, Husserl, Heidegger, Lukacs, Marxism vs. existentialism, and theories of interpretation.

430. Topics in Philosophical Logic

Spring of even-numbered years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: PHL 330.

Selected topics from metalogic, model theory, artificial intelligence and deviant logics.

440. Central Issues in Ethics

Spring. 4(4-0)

P: PHL 340 or PHL 350 or PHL 450.

Twentieth-century discussions of universalization, utilitarianism, nature of a moral theory, moral language, relativism, skepticism, theory and practice, weakness of will, moral education, and justification.

450. Topics in Social and Political Philosophy

Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: PHL 340 or PHL 350 or PHL 440.

Political authority, individual liberty, aspects of social justice. Authors such as Plato, Hobbes, Locke, and Rawls.

460. Epistemology

Fall. 3(3-0)

P: One Philosophy course at the 300 level or above.

Theories and concepts of knowledge, belief, epistemic justification, certainty, and reason.

461. Metaphysics

Spring. 3(3-0)

R: One Philosophy course at the 300 level or above or two other Philosophy courses.

Basic concepts employed in trying to understand the nature of things. Concepts include universals, particulars, things, kinds, properties, events, persons, change, causality, chance, existence, possibility, necessity, space, and time.

462. Philosophy of Mind

Fall. 3(3-0)

R: One philosophy course at the 300 level or above or two other Philosophy courses.

Modern theories of the mind, other minds, and the mind's relation to the body. Theories include dualism, behaviorism, criteriology, reductive and eliminative materialism, and functionalism.

463. Introduction to Cognitive Science

Spring. 3(3-0) Interdepartmental with Linguistics and Psychology.

P: PHL 462 or PSY 200 or LIN 401 or CPS 440.

Cognitive processing of information by animals, humans, and computers. Relevant issues in philosophy, linguistics, psychology, neurophysiology, and artificial intelligence.

474. Aesthetic Theory and Modernism

Fall. 4(4-0) Interdepartmental with History of Art, English, Linguistics and Languages, Music, and Romance Languages.

R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.

Problems, assumptions, and arguments of modern aesthetic theory examined in the context of debates over modernity and modernist artistic practice.

480. Philosophy of Science

Fall. 4(4-0)

P: PHL 130 or PHL 330 or a 200 level mathematics or statistics course or approval of department.

Structure of scientific theories and explanation. Causation, prediction, induction, confirmation, discovery, and scientific progress.

481. Topics in Science Studies

Spring. 3(3-0)

P: Three science courses or two philosophy courses or approval of department.

Converging trends in philosophy, history, and sociology of science. Such topics as scientific rationality and objectivity, evolutionary epistemology, continental approaches, or feminist perspectives.

484. Philosophy of Biological Science

Spring. 3(3-0)

P: Three courses in biological science or two courses in PHL or approval of department.

Philosophical and methodological issues in biology. Topics such as functional explanation, classification, the structure of evolutionary theory, reductionism, observation and measurement, or value-neutrality.

485. Philosophy of Social Science

Spring. 3(3-0)

P: Three courses in social science or two courses in PHL or approval of department.

Explanations, theories, and concepts in social science. Such topics as historicism; reductionism; rationality and relativism; comparison of logical empiricist, interpretive, and critical theory approaches.

486. Biotechnology in Agriculture: Applications and Ethical Issues

Spring of even-numbered years. 3(3-0) Interdepartmental with Horticulture, Crop and Soil Sciences, and Forestry. Administered by Horticulture.

P: BS 111 or BOT 105. R: Not open to freshmen and sophomores.

Current and future roles of biotechnology in agriculture: scientific basis, applications. Environmental, social, and ethical concerns.

487. Philosophy of Mathematics

Fall of odd-numbered years. 3(3-0)

P: Three courses in mathematics or PHL 330 or approval of department.

Nature of mathematical truth and knowledge. Theses of logicism, formalism, intuitionism, and conventionalism.

488. Philosophy of Physical Science

Fall of even-numbered years. 3(3-0)

P: Three courses in physical science or two courses in PHL or approval of department.

Philosophical problems of the physical sciences. Topics from such areas as quantum mechanics, space-time, classical mechanics, or relativity.

490. Independent Study

Fall, Spring. 1 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.

R: Approval of department.

Supervised special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

491. Special Topics in Philosophy

Fall, Spring, Summer. 3 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.

Special topics supplementing regular course offerings, proposed by faculty on a group study basis.

492. Seminar for Majors (W)

Fall. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.

P: 16 credits in Philosophy. R: Open only to majors in Philosophy or approval of department. Completion of Tier I writing requirement.

Advanced, variable topic seminar for undergraduate majors. Seminar presentations. Substantial paper.

499. Senior Thesis Research (W)

Fall, Spring. 3 credits.

R: Completion of Tier I writing requirement. Approval of department.

Individual research project supervised by a faculty member that demonstrates the student's ability to do independent research and submit or present a major paper.

810. Seminar in the History of Philosophy
Fall. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Major thinkers, themes, periods, or movements in the history of philosophy.

820. Seminar in Continental Philosophy
Fall of even-numbered years. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Major figures or themes in 19th and 20th century continental philosophy.

830. Seminar in Logic and the Philosophy of Language
Fall of odd-numbered years. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Selected topic in philosophy of language, philosophical logic, and metatheory.

840. Seminar in Value Theory
Spring. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Major figures, themes, or periods in ethics or aesthetics. Topics vary.

850. Seminar in Social and Political Philosophy
Spring of even-numbered years. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Major figures, themes, or periods in social and political philosophy. Topics vary.

860. Seminar in Metaphysics and Epistemology
Fall. 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Selected topics in metaphysics, epistemology, and philosophy of mind.

870. Seminar in Philosophy of Health Care
Fall. 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Ethical, political, theoretical, and methodological issues in medicine and health care.

880. Seminar in Philosophy of Science
Spring. 2 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in Philosophy or approval of department. Selected topics in the philosophy of the special sciences, in the metatheory of science, and in the social studies of science.

890. Independent Study
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 20 credits in all enrollments for this course. R: Approval of department. Special projects, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings.

894. Practicum in Philosophy of Health Care
Spring of odd-numbered years. 4 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P: PHL 344. R: Open only to doctoral students in Philosophy or approval of department. Study of ethical and policy issues in hospital and governmental agency settings.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department. Directed research leading to a master's thesis in partial fulfillment of Plan A master's degree requirements.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 50 credits in all enrollments for this course. R: Approval of department.

PHYSICAL EDUCATION AND EXERCISE SCIENCE PES

Department of Physical Education and Exercise Science College of Education

101. Aquatics
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in water-related activities. Separate course sections in activities such as swimming, diving, lifeguarding, water polo, and sailing.

102. Combative Sports
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in the art or sport of physical training. Separate course sections in activities such as judo, karate, aikido, and fencing.

103. Conditioning
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Knowledge and competency in physical fitness activities that emphasize cardiovascular and muscular training. Separate course sections in activities such as aerobic exercise, power walking, swim conditioning, and weight training.

104. Dance
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in dance activities. Separate course sections in dance styles such as ballet, modern, jazz, Latin, and social.

105. Gymnastics
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in gymnastics. Separate sections in activities such as apparatus, tumbling, and floor exercise.

106. Individual Sports
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in individual sports. Separate course sections in activities such as bowling, golf, skating, self defense, and track and field.

107. Racquet Sports
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in racquet sports. Separate course sections in sports such as badminton, racquetball, and tennis.

108. Team Sports
Fall, Spring, Summer. 1 credit. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in PES 101 through PES 108. Skill and knowledge development in team sports. Separate course sections in sports such as basketball, ice hockey, lacrosse, soccer, softball, and volleyball.

120. Personal Health
Fall, Spring, Summer. 3(3-0) Physical, mental, emotional, social, and spiritual domains of health. Alternative health values and behaviors. Developing healthy lifestyles.

121. The Healthy Lifestyle
Fall, Spring, Summer. 3(2-2) Cardiovascular risk factors, lifestyle habits, and aerobic capacities and their relationship to optimal health and longevity. Individual physical activity required as part of the course.

125. First Aid and Personal Safety
Fall, Spring, Summer. 3(3-0) Knowledge and application of first aid concepts relating to respiratory and cardiopulmonary disorders, shock, wounds, burns, fractures, drug poisoning, childbirth, litigation. Preventing trauma by recognizing and avoiding safety hazards.

170. Foundations of Physical Education and Exercise Science
Fall, Spring. 2(2-0) Physical education and exercise science as a disciplinary major. Subdisciplines and professions. Historical perspectives.

171. Athletics in Higher Education
Fall. 1(1-0) Philosophy and organization of athletics. Athletics and academic achievement. Ethical issues, legal issues, social conduct, eligibility, athlete's rights and responsibilities. Coaches' responsibilities and institutional obligations.