PHARMACOLOGY  PHM

College of Human Medicine
College of Osteopathic Medicine
College of Veterinary Medicine

350. Introductory Human Pharmacology
Spring, 3(0-0) PSL 333 or concurrently; or approval of department.
Survey of pharmacology including general principles, central nervous system drugs, autonomic nervous system drugs, cardiovascular and renal drugs, endocrine drugs, anti-infectives, poisoning therapy, and other basic related topics.

430. Drug Abuse
Fall, 4(4-0) Juniors or approval of department. Biology and chemistry recommended.
Actions, mechanism of action, toxicity and uses of drugs of abuse. Sociological and psychological aspects of drug abuse and the legal aspects of the sale and distribution of drugs are considered.

480. Special Problems
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 5 credits. Approval of department.

520A. Principles of Pharmacology
(520.) Fall, 4(4-0) PSL 500B, 500C. Primarily for students of Veterinary Medicine.
Drug absorption, distribution, biotransformation, metabolism, drug receptor interactions, toxicology, mechanisms of drug action.

520B. Principles of Pharmacology
Winter, 4(4-0) PSL 500A, or 801, 802, 803. Primarily for students of Human and Osteopathic Medicine.
Pharmacology principles, including absorption, distribution, biotransformation, metabolism, drug receptor interactions, toxicology, mechanisms of drug action.

521A. Pharmacodynamics
(521.) Winter, 5(4-0) 520A. Primarily for students of Veterinary Medicine.
Pharmacology of drugs that affect the heart, kidney, central nervous system and non-vascular smooth muscle. Endocrine and autonomic pharmacology.

521B. Pharmacodynamics
Spring, 4(4-0) 520B. Primarily for students of Human and Osteopathic Medicine.
Pharmacology of the nervous system (central, peripheral and autonomic); cardiovascular, renal, gastrointestinal drugs.

810. Synaptic Transmission
Winter of odd-numbered years, 4(4-0) Approval of department.
Chemical and electrical aspects of the transmission of nervous impulses at synaptic and neurotransmitter junctions and the influence of drugs upon these processes.

811. Organ System Pharmacology
Fall of odd-numbered years, 4(3-3) 531A or 531B and approval of department.
Current concepts and recent advances in the areas of cardiovascular, renal and skeletal smooth muscle pharmacology.

812. Advanced Principles of Pharmacology and Toxicology
Spring of odd-numbered years, 5(3-0) 531A or 531B.
Kinetix of drug absorption, elimination and metabolism, drug receptor interactions, toxicology of metals, pesticides, industrial and inhalation toxicology, developmental toxicology, teratogenesis, mutagenesis, and carcinogenesis.

813. Cardiac Pharmacology
Winter of even-numbered years, 4(4-0) 520A, 521A or 550B, 531B; PSL 801, 803, 803; or approval of instructor.
Effects of drugs on normal physiological and biochemical processes in cardiac cells are studied. Emphasis is placed on mechanisms of drug action.

870. Problems
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 5 credits. Approval of the department.
Limited amounts of individual work on selected research problems.

899. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Limited amounts of individual work on selected research problems.

PHILOSOPHY  PHL

College of Arts and Letters

101. Introduction to Philosophy: Ethics and Value
Fall, Winter, Spring, 3(3-0) Students may not receive credit for both 101 and 330.
Moral responsibilities, practical and theoretical, freedom and morality, individual liberty and collective authority and contemporary moral issues are typical problems.

102. Introduction to Philosophy: Epistemology and Metaphysics
Fall, Winter, Spring, 3(3-0)
Skepticism and certainty, existence, matter and mind, God, space and time, knowledge and belief, perception, personal identity, causality, and free-will are typical problems.

103. Introduction to Philosophy: Logic
Fall, Winter, Spring, 3(3-0)
Deductive and inductive reasoning and such topics as rational argumentation, fallacies, definition, meaning, truth and evidence.

200H. Honors Work
Fall, Winter, Spring, 1 to 18 credits. Approval of department.

211. Introduction to the History of Philosophy, Part I
Fall, Winter, Spring, 3(3-0)
The Greek and Roman period with emphasis on Plato and Aristotle.

212. Introduction to the History of Philosophy, Part II
Winter, Spring, 3(3-0)
The Middle Ages and early modern periods, with emphasis on Aquinas, Descartes, Spinoza and Leibnitz.

213. Introduction to the History of Philosophy, Part III
Fall, Spring, 3(3-0)
The eighteenth and nineteenth centuries with emphasis on British empiricism, Kant, and post-Kantian philosophy.

294. Special Topics
Fall, Winter, Spring, Summer, 2(2-0) to 6(6-0) Approval of department.
Intensive study of some particular problem or author in philosophy.

311. Indian Philosophy
Fall, Winter, 3(3-0)
Metaphysical, ethical and social theories developed within major Indian philosophical systems, e.g., philosophical Buddhism, Vedantist transcendentalism, Samkhya dualism, and the Realist schools.

312. Chinese Philosophy
Spring, 3(3-0)
Major cosmological and ethical doctrines of such Chinese authors and movements as Confucius, Mo Tzu, Lao Tzu, Tsimin, Yin-Yang dualism, Buddhism, responses to Western influences, as well as China.

315. American Philosophy
Spring, Summer, 3(3-0) Three credits in philosophy or approval of department.
Examination of such thinkers as Royce, Pierce, James, Dewey, Whitcomb and Santayana, illustrating classic American contributions to philosophy.

321. Existentialism
Fall, Winter, Spring, 3(3-0) Three credits in philosophy or approval of department.
An examination of a major existentialist author (or authors), so designed as to place existentialist views in significant relation to the tradition of European thought.

330. Elements of Ethics
Fall, Winter, Spring, Summer, 3(3-0) Juniors. Students may not receive credit for both 101 and 330.
An inquiry into the nature of the right and the good, addressed to such fundamental problems as the objectivity of moral judgments, the criterion of right and wrong, and the grounds of moral responsibility.

337. Logic I
Fall, Winter, Spring, 4(4-0)
Modern symbolic methods in deductive reasoning. The logic of connectives and quantifiers.
335. Logic II  
Fall, Winter, Spring. 4(4-0) 3 credits or approval of department. 
The logic of identity, functions, and descriptions. Theory-building: axioms, definitions, theorems.

340. Moral Problems in Medicine and the Life Sciences  
Winter, Spring. 3(3-0) 
Philosophical aspects of euthanasia, allocation of scarce medical resources, experimentation, informed consent, truth telling and the doctor-patient relationship, genetic counseling, genetic engineering, behavior control, and health care recovery.

341. Philosophical Aspects of Feminism  
Fall, Winter, Spring. 3(3-0) 
Conceptual issues in feminist theory. Such topics as: separatism, rape, respect and self-respect, personhood, power and control and feminism will be analyzed and explored.

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.

351. Contemporary Esthetic Theory  
Winter, 3(3-0) Three credits in philosophy or 6 credits in art, music, or literature. 
Critical examination of contemporary theory in esthetics and the philosophy of art, in which the primary categories of reflection upon the arts have gained their currency. Readings from such authors as Tolstoy, Santayana, Croce, Bullough, Freud, Parker, Prall, Greven.

355. Philosophy of Religion  
Winter, Spring. 3(3-0) Three credits in philosophy or six 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 six credits in political science or approval of department. 
Philosophical examination of such legal concepts as punishment, responsibility, rights and duties, judicial decision-making, and such legal theories as natural law, positivism and realism.

361. Philosophy of Technology  
Fall, Winter, 4(4-0) Sophomores or approval of college. Interdisciplinary with and administered by Lyman Briggs College. 
Is our technology desirable? Are its social forms desirable? What alternatives are there? Students will develop and defend their own approaches to technology.

365. Social and Political Philosophy  
Winter, Spring. 3(3-0) Three credits in philosophy or six 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.

386. The Philosophy of Karl Marx  
Spring. 3(3-0) 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, psychological, 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, Part I  
Fall, Winter. 3(3-0) Three credits in philosophy or 6 credits beyond basics in natural science or social science or mathematics or approval of department. 
Conflicting views about science. Such topics as: scientific methodology, the objectivity of science, the presuppositions, goals and limits of science.

381. The Nature of Science, Part II  
Winter, Spring. 3(3-0) 
Issues concerning science and men. 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  
Spring. 3(3-0) Juniors. 
Philosophical problems found in such writers as Aristotle, Goethe, Dostoevsky, Tolstoy, Mann, Hesse, Mann. 

400H. Honors Work  
Fall, Winter, Spring. 
Variable credit. Approval of department. 
Individually selected program of supervised group or individual study dealing with some phase of philosophy.

410. Plato  
Fall. 5(4-0) Three credits in philosophy at 300 level 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, Part I  
Winter. 4(3-0) Three credits in philosophy at the 300 level or higher 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, Part II  
Spring. 4(3-0) 411 or approval of department. 
Continuation of 411, with emphasis on Aristotle's method in relation to his ethics, politics and rhetoric.

413. Continental Rationalism  
Fall. 5(4-0) Three credits in philosophy at 300 level 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  
Winter. 4(3-0) Three credits in philosophy at 300 level or higher, or 9 credits in philosophy, or approval of department. 
Significant philosophers and philosophical problems of the Medieval period.

416. British Empiricism  
Winter. 5(4-0) Three credits in philosophy at 300 level or higher 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(3-0) Three credits in philosophy at 300 level or higher or approval of department. 
Significant philosophical developments in 19th century thought, with emphasis on post-Kantian idealism.

420. Analytic Philosophy, 1900-1945  
Fall. 4(3-0) 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, Russell, Moore, Wittgenstein and Carnap. Will provide a background for recent analytic philosophy.

421. Formal Linguistic Analysis  
Winter. 4(3-0) Three credits in philosophy or approval of department. 
Issues in the works of such philosophers as Carnap, Quine, Goodman and Bergmann.

422. Non-FORMAL Linguistic Analysis  
Spring. 4(3-0) 420. 
Issues in the works of such philosophers Wittgenstein, Ryle, Austin and Strawson.

423. Kant  
Spring. 5(4-0) Three credits in philosophy at 300 level or higher 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  
Spring. 4(3-0) Three credits in 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  
Winter, 4(3-0) Three credits in philosophy at the 300 level or higher or 9 credits in philosophy or approval of department. 
Hegel's Phenomenology of Spirit, Science of Logic, or Philosophy of Right. Textual analysis and critical study of epistemological, metaphysical or ethicopolitical aspects of Hegelian philosophy.

428. Special Topics in Existentialism  
Winter, Spring. 4(3-0) 333 or approval of department. 
An examination of existentialist thought in terms of a single author or topic.

431. Modern Ethical Theories  
Fall. 4(3-0) 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.
Philosophy of Courses

432. Contemporary Ethical Theories
Winter, 4(3-0) 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.

437. Nonstandard Logics
Winter, 4(4-0) 337 or approval of department.
Such topics as the logic of possibility, of existence, of knowledge and belief, of obligation, of tense; many-valued logics; intuitionist logic.

439. Introduction to Metatheory
Spring, 4(4-0) 337 or approval of department.
Metatheory for quantificational logic and first order theories—including consistency and completeness theorems, independence of axioms. Introduction to model theory and proof theory.

440. Epistemology, Part I
Fall of even-numbered years. 4(3-0) 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.

441. Epistemology, Part II
Winter of odd-numbered years. 4(3-0) 440 or approval of department.
Continuation of 440.

445. Metaphysics, Part I
Fall of odd-numbered years. 4(3-0) 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.

446. Metaphysics, Part II
Winter of even-numbered years. 4(3-0) 445 or approval of department.
Continuation of 445.

447. Philosophy of Mind
Winter. 4(3-0) 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. History of Esthetic Theory
Spring, 4(3-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or approval of department.
Poetics of Aristotle, and the tradition which it has generated in critical reflection on theory of art, the drama, and fine arts.

460. Moral and Political Issues
Fall, Winter, Spring, 4(3-0) 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(3-0) 337 and 338 or approval of department.
An analysis of the nature of mathematical truth. The theses of logicism, formalism, intuitionism, and conventionalism are critically examined.

480. Philosophy of Science, Part I
Winter, 4(4-0) 337 or approval of department.
Topics such as: the logical structure of scientific theories, empirical meaningfulness and testability, deductive and probabilistic explanation, prediction.

481. Philosophy of Science, Part II
Spring, 4(3-0) 337 or approval of department.
Topics such as: discovery, induction and confirmation, theory.

483. Philosophy of Physical Science
Fall, 4(4-0) Nine credits in philosophy or approval of department. Interdepartmental with and administered by Lyman Briggs College.
Philosophical problems of the physical sciences. The topics will be taken from such areas as quantum mechanics, space-time, classical mechanics, relativity.

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 College.
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(3-0) Three credits in philosophy or approval of department. Interdepartmental with and administered by Lyman Briggs College.
Selected problems in the methodology of the social sciences, including such topics as concept formation and theory construction, explanation and insight, subjectivity and value judgments, emergence and teleology, historicism, relativism, measurement, classification, teleological and functional explanation, teleological systems, epistemology, and conventionalism.

490. Individual Reading
Fall, Winter, Spring, Summer. 1 to 4 credits. Approval of department. Supervised reading on a particular author or topic.

494. Special Topics
Fall, Winter, Spring, Summer. 2(3-0) to 6(6-0) Approval of department.
Intensive study of some particular problem or author in philosophy.

495. Proseminar
Winter, Spring. 1 credit. May re-enroll 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.

825. Seminar in the History of Philosophy
Fall, Winter, Spring, 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

830. Seminar in Ethics
Winter, Spring, Summer. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

837. Seminar in Logic
Fall, Winter, Spring. 4(3-0) May re-enroll for credit. Approval of department.

841. Seminar in Epistemology
Fall, Winter, Spring. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

845. Seminar in Metaphysics
Fall, Winter, Spring, 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

850. Seminar in Aesthetics
Fall, Winter, Spring. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

855. Seminar in the Philosophy of Science
Fall, Winter, Spring, 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

870. Seminar in the Philosophy of Language
Fall. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.
Concrete bases of language and nature of meaning.

880. Seminar in Social Philosophy
Spring, 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.
Philosophy of law and of the state.

910. Graduate Reading Course
Fall, Winter, Spring, Summer. 1 to 10 credits. May re-enroll for credit. Approval of department.
Supervised reading course for advanced graduate students for more thorough investigation of special fields.

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

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

PHYSICAL SCIENCE

PHS

College of Natural Science

203. Foundations of Physical Sciences
Fall, Winter, Spring, Summer. 4(3-3) Primarily for elementary school teachers. Integrated descriptive course in the elements of physical science including the interrelations among chemistry, geology, meteorology, astronomy, and physics.