PHARMACOLOGY  PHM

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

350. Introductory Human Pharmacology
Spring. 3(3-0) PSL 332 or concurrently; or approval of department. Survey of pharmacology including general principles, mechanisms of drug action in the autonomic nervous system, endocrine and renal systems, drugs affecting the heart, 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
Fall. 4(4-0) PSL 500B, 500C. Primarily for students of Veterinary Medicine. Drug absorption, distribution, biotransformation, autonomic system, receptor theory and pharmacogenetics; adverse drug reactions, chemical toxicity, endocrinology and neurology, antibiotic and anti-neoplastic agents. Pharmacology of the autonomic nervous system.

520B. Principles of Pharmacology
Winter. 4(4-0) PSL 500A, or 501, 502, 503. Primarily for students of Human and Osteopathic Medicine. Pharmacology principles, including absorption, distribution, biotransformation, drug antagonism, receptor theory and pharmacogenetics; literature data analysis; adverse drug reactions. Chemical therapy including anti-neoplastic, anti-viral and anti-microbial agents; endocrine and emergency therapies.

521A. Pharmacodynamics
Spring. 5(4-0) 520A. Primarily for students of Veterinary Medicine. Pharmacology of drugs that affect the heart, kidney, central nervous system and 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 neuroeffector junctions and the influences of drugs upon these processes.

811. Advanced Renal and Autocoid Pharmacology
Spring of even-numbered years. 4(4-0) 521A or B and approval of department. Advanced renal, endocrine and autocoid pharmacology.

812. Advanced Principles of Pharmacology and Toxicology
Spring of odd-numbered years. 5(5-0) 521A or 521B. Kinetics 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 520B, 521B; PSL 801, 802, 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 department. Limited amounts of individual work on selected research problems.

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

PHILOSOPHY  PHL

College of Arts and Letters

101. Introduction to Philosophy: Ethics and Value
Fall, Winter, Spring, Summer. 3(3-0) Students may not receive credit for both 101 and 330. Moral responsibility, praise and blame, good and evil, justice, law and morality, individual liberty and collective authority and contemporary moral issues are typical problems.

102. Introduction to Philosophy: Epistemology and Metaphysics
Fall, Winter, Spring, Summer. 3(3-0) Skepticism and certainty, existence 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, Summer. 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 16 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 Leibniz.

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 writer 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, Samkya dualism, and the Realist schools.

312. Chinese Philosophy
Spring. 3(3-0) Major cosmological and ethical doctrines of such Chinese authors and movements as Confucian, Mo Tzu, Leao Tzu, Taoism, Yin-Yang dualism, Buddhism, responses to Western influences, the new 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, Whitehead and Santayana, illustrating classic American contributions to philosophy.

323. 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 credits in philosophy or approval of department.

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 extension 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.

338. Logic II
Fall, Winter, Spring. 4(4-0) 337 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 and 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 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, Spring. 3(3-0)
Students will examine counter cultural critiques of contemporary culture and values, and develop, articulate, defend their own views on such issues as these which immediately affect their own lives.

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, Bollagh, Freud, Parker, Prull, Greene.

355. Philosophy of Religion
Winter, 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 six 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 college. Interdepartmental 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 appraisals of 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.

366. 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, 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, Part I
Fall, Winter, Spring. 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 man. 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 Aeschylus, Goethe, Dostoevsky, Tolstoy, Mann, Heine, Camus.

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 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 9 credits in philosophy 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, Morre, Wittgenstein and Carnap. Will provide a background for recent analytic philosophy.

421. Formal Linguistic Analysis
Winter. 4(3-0) 337 and 420 or approval of department.
Issues in the works of such philosophers as Carnap, Quine, Goodman and Bergman.

422. Non-Formal Linguistic Analysis
Spring. 4(3-0) 420.
Issues in the works of such philosophers as 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 of philosophy at the 300 level or higher or approval of department.

Typical areas of study are phenomenology, structuralism, contemporary interpretation of Marx, hermeneutics (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 and ethical political aspects of Hegelian philosophy.

428. Special Topics in Existentialism
Winter. 4(3-0) 3 credits 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.

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.

433. 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; intutionist logic.

439. Introduction to Metaphysics
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 assertion, conviction, belief, and certainty.

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

Continuation of 445.

447. Philosophy of Mind
Winter. 4(3-0) Three credits in philosophy at the 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 the 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 poetry, the drama, and fine arts.

458. Philosophy of Mathematics
Spring. 4(3-0) 337 and 338 or approval of department.

An analysis of the nature of mathematical truth, the theories of logicism, formalism, intuitionism, and conventionalism are critically examined.

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.

469. Philosophy of the Social Sciences
Fall, Winter, Spring. 4(3-0) Three credits in philosophy at the 300 level or higher or 9 credits in philosophy or 9 credits in social science or approval of department.

Selected problems in the methodology of the social sciences, including such topics as: constructivism and theory construction, explanation and insight, subjectivity and value judgments, emergence and teleology, historicism, reductionism, measurement, and statistical inference.

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

471. Philosophy of Mathematics
Spring. 4(3-0) 337 and 338 or approval of department.

An analysis of the nature of mathematical truth, the theories of logicism, formalism, intuitionism, and conventionalism are critically examined.

475. Philosophy of the Social Sciences
Fall, Winter, Spring. 4(3-0) Three credits in philosophy at the 300 level or higher or 9 credits in philosophy or 9 credits in social science or approval of department.

Selected problems in the methodology of the social sciences, including such topics as: constructivism and theory construction, explanation and insight, subjectivity and value judgments, emergence and teleology, historicism, reductionism, measurement, and statistical inference.

479. Proseminar
Winter, Spring. 1 credit. May re-enroll for a maximum of 4 credits. Junior. Fifteen credits in philosophy or approval of instructor. Each section will examine a particular topic or author. Emphasis on discussion of student papers.

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

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

487. Seminar in Logic
Fall. 4(3-0) May re-enroll for credit. Approval of department.

494. Special Topics
Fall, Winter, Spring. 2(3-0) to 6(6-0). Approval of department.

Intensive study of some particular problem or author in philosophy.

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

495. Seminar in Social and Political Theory
Fall, Winter, Spring. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

495. Seminar in Social and Political Theory
Fall, Winter, Spring. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.

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

495. Seminar in Social and Political Theory
Fall, Winter, Spring. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.
PHYSICS

College of Natural Science

Introductory physics courses are divided into four groups:

1. 257, 258, 259 (theory) and 257, 258, 259 (laboratory). These are for students who are taking at the same time, or who have taken, first year mathematics through college algebra and trigonometry.

2. 281, 282, 283 (theory) for students of the natural sciences who have taken Calculus I (MTH 112).


A student may change from one group of introductory courses to another, but may not earn credit for more than one complete sequence. Credit may not be earned for more than one of the courses PHY 294, 397 or 364.

PHY 201, 256, 301, 357 and 430 cannot be used to meet the requirements for a major in physics.

All 400 level physics courses (except 450) require PHY 299 or 293B or equivalent and MTH 215 as prerequisites.

201. The Science of Sound I

Rock, Bach and Oscillators


202. The Science of Sound II

Spring. 3(4-0) or 4(4-0). Interdisciplinary with the Physical Engineering Department.

237. Introductory Physics

Fall, Winter, 3(4-0) MTH 102 or 109 or 111 or concurrently. Mechanics and heat.

257. Introductory Physics Laboratory

Fall, Winter, Summer. 1(0-2) or 291 or concurrently. Mechanics and heat.

258. Introductory Physics Laboratory

Winter, Spring. 1(0-2) 238 or 292 or concurrently. Heat, electricity and magnetism.

259. Introductory Physics Laboratory

Fall, Winter, Summer. 1(0-2) 239 or 230 or concurrently. Wave motion, sound, light and modern developments.

261. Basic Physics I

Fall, Winter, Spring. 3 credits—Self-paced only. MTH 112.

281A. Physics I

Fall, Winter, Spring. 3 credits—Self-paced only. MTH 113; PHY 291 or concurrently.

282. Basic Physics II

Fall, Winter, Spring. 3 credits—Self-paced only. MTH 214 or approval of department.

292A. Physics IIIA

Fall, Winter, Spring. 1 credit—Self-paced only. MTH 214 or approval of department.

A-149