Philosophy of Courses

432. Contemporary Ethical Theories
Winter, 4(3-0) 431 or 6 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 Metalanguage
Spring, 4(4-0) 337 or approval of department.
Metaphysics 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.

444. 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.

445. 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 poetry, 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(4-0) 337 and 338 or approval of department.
An analysis of the nature of mathematical truth. The theorems 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(4-0) 337 or approval of department.
Topics such as: discovery vs. validation of theories, probability, induction and confirmation theory.

483. Philosophy of Physical Science
Fall, 4(4-0) Nine credits in physical science 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 Social Sciences
Spring, 4(3-0) Three credits in philosophy at 300 level or higher or 9 credits in philosophy or approval of department. Selected problems in the methodology of the behavior 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, Summer. 1 to 4 credits. Approval of department.
Supervised reading on a particular author or topic.

494. Special Topics
Fall, Winter, Spring, Summer. 2(2-0) to 6(3-0) 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 6 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
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. 4(3-0) May re-enroll for a maximum of 12 credits. Approval of department.
The nature of aesthetic values, grounds of criticism, function of the arts, etc.

855. 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.

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

890. 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.

PHYSICAL SCIENCE

College of Natural Science

203. Foundations of Physical Sciences
Fall, Winter, Spring, Summer. 4(3-0) Primarily for elementary school teachers. Integrated descriptive course in the elements of physical science including the interrelations among chemistry, geology, meteorology, astronomy, and physics.
400. Physical Science for Teachers
Fall, Winter, Spring, Summer. 3 or 4 credits. May re-enroll for a maximum of 12 credits. Teacher certification with science major or minor.

For in-service teachers stressing process, inquiry, meaning and field experience. Topics will be generated from the classroom experiences of participants.

410. Seminar on Recent Advances in Physical Science
Fall, Winter, Spring, Summer. 3(0-3)
May re-enroll for a maximum of 6 credits if different topics is taken. Approval of department. A series of lectures by senior faculty of topics on the history, development, the most recent advances and the possible future and limits of the physical sciences.

411. Seminar on Man, His Universe
Fall, Winter, Spring, Summer. 3(0-3)
Approval of department. A creative review by senior faculty from Astronomy, Biochemistry, Biophysics, Geology, Physics and Philosophy on the impact of recent space programs in developing modern concepts of the universe.

421. Seminar on Man, His Earth
Fall, Winter, Spring, Summer. 3(0-3)
Approval of department. A summary by senior faculty from Astronomy, Botany, Geology, Meteorology, and Zoology of new ideas, methods, and theories employed by current researchers to unravel the mysteries of the earth, its interior, the forces developing the scene surface features, and the evolution of life in its historical setting.

890. Problems in Physical Science
Fall, Winter, Spring, Summer. 1 to 12 credits. May re-enroll for a maximum of 15 credits. Bachelors degree in a physical science.

PHYSICAL SYSTEMS IN AGRICULTURE AND NATURAL RESOURCES
See Agricultural Engineering

PHYSICS

College of Natural Science

Introductory physics courses are divided into four groups:

1) 237, 238, 239 (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) 291A, 292, 293 (theory) for students of the natural sciences who have taken Calculus I (MTH 112).


Students in 292, 293, 294, 291A, 291B, 292A or 292B, 293A, 293B may take either 392, 393, 394, or 297, 298, 299 laboratory course sequences.

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, 357 or 364.

201. The Science of Sound I: Rock, Bases and Oscillators
Winter. 3(3-0) or 4(4-0) Interdepartmental with the Mechanical Engineering Department.

Music programming. Extension of 282, plus frames of reference, special relativity, rocket equation, forced oscillations, resonances, fluid motion, numerical (computer) solution, moments of inertia, gyroscopic motion.

202. The Science of Sound II
Spring. 3(3-0) or 4(4-0) 301. Interdepartmental with administered by the Mechanical Engineering Department.


230. The Role of the Natural Sciences in Future Environments
Fall. 4(4-0) Interdepartmental with the departments of Entomology, Geography and Geology and the College of Natural Science and administered by the College of Natural Science.

Physical and biological science concepts relevant to understanding of environmental issues. Options for action in areas of population size, energy and life support system. Illustrated by case studies.

237. Introductory Physics
Fall, Winter. 3(4-0) MTH 102 or 109 or 111 concurrently.

Mechanics and heat.

238. Introductory Physics
Winter, Spring. 3(4-0) 297.

Heat, electricity and magnetism.

239. Introductory Physics
Fall, Spring. 3(4-0) 238.

Wave motion, sound, light, and modern developments.

DC. Energy Consumption and Environmental Quality
For course description, see Interdisciplinary Courses.

257. Introductory Physics Laboratory
Fall, Winter, Summer. 1(0-2) 237 or 291, or concurrently.

Mechanics and heat.

258. Introductory Physics Laboratory
Fall, Winter, Spring. 1(0-2) 239 or 292 or concurrently.

Heat, electricity and magnetism.

259. Introductory Physics Laboratory
Fall, Spring, Summer. 1(0-2) 239 or 293 or concurrently.

Wave motion, sound, light and modern developments.

261. Basic Physics I
Fall, Winter, Spring. 3 credits. Self-paced only. MTH 112.

Static equilibrium, Newton's laws, power, harmonic motion, rotational motion.

261A. Physics IA
Fall, Winter, Spring. 1 credit. Self-paced only. MTH 113; PHY 281 or concurrently. Examinations of 281, plus frames of reference, special relativity, rocket equation, forced oscillations, resonances, fluid motion, numerical (computer) solution, moments of inertia, gyroscopic motion.

262. Basic Physics II
Fall, Winter, Spring. 3 credits. Self-paced only. 282, or 282A, or 288, or 292A, or 292B. Microscopic origin of heat flow and first law of thermodynamics, electric and magnetic forces and sources, direct currents.

262A. Physics IIA
Fall, Winter, Spring. 1 credit. Self-paced only. 281, or 281A, or 287, or 291A, or 291B.

263. Basic Physics III
Fall, Winter, Spring. 3 credits. Self-paced only. 295, or 295A, or 295B, or 295C, or 295D. Elements of physics, light, and optical instruments, wave-particle duality, radioactivity, fission and fusion, elementary particles, fundamental forces of nature.

263A. Physics IIIA
Fall, Winter, Spring. 1 credit. Self-paced only. 292, or 292A, or 292B, or 292C, or 292D, or 292E. Physics of sound, light, and optical instruments, wave-particle duality, radioactivity, fission and fusion, elementary particles, fundamental forces of nature.

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