and their career goals under the coordination of a dietetics faculty member. On-the-job supervision will be provided by the participating hospital dietitians. Prerequisites: Admission to the dietetics major; NUTR 394, NUTR 395. Application for enrollment must be completed through the course instructor in the fall semester prior to the summer in which it will be taken.

NUTR 495. Senior Seminar in Dietetics. 2 credits. Offered fall.

Students will be introduced to research in dietetics and conduct a senior research project. The Code of Ethics and Standards of Practice of the American Dietetic Association will be investigated, and students will prepare for their postgraduate dietetic internship. Prerequisite: Admission to the dietetics major.

NUTR 496. Special Studies in Nutrition/Dietetics. 1-3 credits. Offered fall and spring.

This course is designed to give the student in dietetics an opportunity to complete independent study, professional conference participation and/or research under faculty supervision. Prerequisite: Permission of the coordinator of the dietetics program.

NUTR 499. Honors. 6 credits. Offered fall and spring.

Year course.

**Persian**

PERS 101. Elementary Persian I. 3-4 credits.

The fundamentals of Persian through listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory. Student will receive no credit for course if he/she has had two or more years of the language in high school.

PERS 102. Elementary Persian II. 3-4 credits.

The fundamentals of Persian through a higher level of listening, speaking, reading and writing. Practice in pronunciation and development of comprehension. One hour’s work a week in the language laboratory. Students will receive no credit for the course if he/she has had two or more years of the language in high school. Prerequisites: PERS 101.

PERS 231. Intermediate Persian I. 3 credits.

A thorough review of first year grammar and vocabulary building. Conversation, composition and reading will be chosen to reach competency at the lower intermediate level. Prerequisite: PERS 102.

PERS 232. Intermediate Persian II. 3 credits.

A thorough review of PERS 231 grammar and vocabulary building. Conversation, composition and reading will be chosen to reach competency at the advanced intermediate level. Prerequisite: PERS 231 or permission of the instructor.

PERS 490. Special Studies in Persian. 3 credits.

Special topics or independent studies in Persian.

**Philosophy**

PHIL 101. Introduction to Philosophy. 3 credits.

An introduction to the basic problems and concepts of philosophy – the nature of man and the self, ethics, theories of knowledge, philosophy of religion, etc. as revealed in the writings of major philosophers. May be used for general education credit.

PHIL 120. Critical Thinking. 3 credits.

An introduction to the techniques for analyzing and evaluating information in everyday experience. The functions of language will be discussed. Techniques for judging the strengths of arguments and the reasonableness of the arguments’ premises will be examined. This course cannot be used to fulfill the B.A. Philosophy requirement. May be used for general education credit. May not be used for major credit.

PHIL 150. Ethical Reasoning. 3 credits.

An introduction to the principles and techniques of rational decision making in ethics, including analysis of arguments and fallacies, ethical theories, and applications of moral principles to moral issues. This course cannot be used to fulfill the B.A. Philosophy requirement. May be used for general education credit. May not be used for major credit.

PHIL 210. Philosophy Through Film. 3 credits.

This course combines feature length films and classic philosophical writings as points of departure for considering perennial philosophical questions such as: What is real? (Metaphysics) How can I know? (Epistemology) What is of value? (Moralitry).

PHIL/REL 218. Philosophy of Religion. 3 credits.

An intensive examination of religion from the standpoint of philosophical thinking with particular emphasis on the way philosophers view such problems as the existence of God, evil, immortality, religious language, etc.

PHIL 240. Greek Philosophy in Context. 3 credits.

This course will involve exploration of the intellectual world of the Ancient Greeks, with particular emphasis on the philosophical, historical and literary works produced during the period. The course will include lectures and site visits throughout Greece.

PHIL 250. Introduction to Symbolic Logic. 3 credits.

An introduction to the languages and techniques of propositional logic and first-order quantification theory.

PHIL 262. Problems in Applied Ethics. 3 credits.

Ethical theories are used to analyze contemporary moral issues in areas such as business and health care. Course content varies.

PHIL 270. Introduction to Ethics. 3 credits.

An introductory study of the basic ethical theories past and present with some application to moral problems.

PHIL 285. Philosophy, Art and Literature. 3 credits.

This course will study artistic works (literary or otherwise) for their philosophical content. Related issues in the philosophy of art for example, the nature of tragedy, theories of interpretation may also be considered.

PHIL 300. Knowledge and Belief. 3 credits.

An extensive examination of theories of knowledge and philosophical problems concerning knowledge and belief. Prerequisite: PHIL 101 or permission of the instructor.

PHIL/ART 305. Seminar in Aesthetics. 3 credits.

Readings and discussions in the persistent philosophical problems of the arts, centering on consideration of the work of art, the artist and the audience. Prerequisite: ART 202, ARTH 205, ARTH 206 or PHIL 101.

PHIL 310. Symbolic Logic. 3 credits.

The study and application of the principles and techniques of modern deductive logic to natural language. Also, examination of the properties of formal systems and of the logical implications and paradoxes of language. Prerequisite: PHIL 250 or consent of the instructor.

PHIL 311. Metaphysics. 3 credits.

Examination of central questions regarding the fundamental nature of reality. Possible topics: universals and particulars, possibility and necessity, identity of objects over time and puzzles of material constitution, the problem of free will and determinism, and the nature of time. Prerequisite: At least one other philosophy course or approval of the instructor.

PHIL/IA 312. Causal Analysis. 3 credits.

Examines causal analysis in national, military, counter- and competitive intelligence. By assessing a factor's amount and kind of efficacy, students will learn the most reliable methods for distinguishing between relevant/irrelevant events and factors, identifying and excluding pseudo-causes and anticipating higher order effects of a causal process. Prerequisite: IA 261 or permission of the instructor.

PHIL/IA 313. Counterfactual Reasoning. 3 credits.

Examines counterfactual reasoning in national, military, counter- and competitive intelligence. By analyzing alternate scenarios and their consequences, students will learn the most relevant methods for employing creative thinking in generating, developing and assessing possibilities; substantiating after-action reports; and structuring futures analysis. Prerequisite: IA 261 or permission of the instructor.

PHIL 314. Rational Decision Theory. 3 credits.

Explores the fundamental principles of making reasonable choices. The course considers both the conceptual, epistemological and logical insights of these principles, as well as applies them to numerous real-world cases faced by recent decision-makers in areas such as intelligence, information analysis, business or politics. Prerequisite: PHIL 120 or instructor consent.

PHIL 315. Logic and Legal Reasoning. 3 credits.

Application of symbolic logic (first-order logic with identity) to legal language and deductive legal argument. Will include close logical analysis of at least one of the following: Supreme Court brief, Supreme Court decision, Supreme Court oral argument. Prerequisite: PHIL 250 or instructor consent.
PHIL 320. Inductive Logic. 3 credits.
Introduction to inductive logic and philosophical problems it raises. Topics discussed: the traditional problem of induction, the Goodman paradox and the new riddle of induction, the probability calculus and kinds of probability, Mill's methods of experimental inquiry and the nature of causality, abduction (inference to the best explanation) and confirmation theory.

PHIL 330. Moral Theory. 3 credits.
An examination, at the intermediate level, of both classical and contemporary moral theories. Critical analysis of the normative and meta-ethical issues these theories raise.

PHIL 335. The Individual, the State and Justice. 3 credits.
Mid-level class in political philosophy. Will read classic and/or contemporary texts in philosophy influential on political thought. Focus may be on views of the justification for and role of the state. Consideration may also be given to the proper relationship of individuals and the state, political freedom autonomy. Prerequisite: PHIL 101 or approval of the instructor.

PHIL 340. Ancient Greek Philosophy. 3 credits.
This course traces philosophical problems raised by the pre-Socratics, Parmenides, Heraclitus, Pythagoras and the Sophists through their treatment by Plato and Aristotle. Emphasis is placed on selected writings of Plato and Aristotle. Prerequisites: PHIL 101 and junior standing or permission of the instructor.

PHIL 341. Modern Philosophy. 3 credits.
A selective survey of major issues and thinkers in Western philosophy from Descartes to Kant.

PHIL 342. Medieval Philosophy. 3 credits.
A survey of the major issues and thinkers of the medieval philosophical world with emphasis on the philosophical writings of those within the Western tradition, such as Augustine, Anselm, Aquinas and Scotus.
Prerequisite: One other philosophy course or approval of the instructor.

PHIL 344. Existentialism. 3 credits.
An examination of existentialism and its major spokesmen including such authors as Kierkegaard, Nietzsche, Sartre, Camus, Marcel and Heidegger.
Prerequisite: PHIL 101 or permission of the instructor.

PHIL/WGS 350. The Philosophy of Feminism. 3 credits.
An intermediate-level examination of philosophical problems in feminist theory and feminist contributions to philosophy.

PHIL 367. Topics in Philosophy of Law. 3 credits.
Examination of the philosophical issues raised by the law, including the nature, foundations and limits of the law, theories of its interpretation and the fundamental interest it aims to protect. Prerequisite: PHIL 270, PHIL 262, PHIL 330 or PHIL 335.

PHIL 370. American Philosophy. 3 credits.
A study of the main philosophical ideas in America, especially pragmatism, with particular emphasis being given to Pierce, James, Royce, Dewey and Whitehead. Prerequisite: PHIL 101 or permission of the instructor.

PHIL/REL 375. Nineteenth Century Philosophy and Theology. 3 credits.
A selected study of 19th century thought, with emphasis on controversies concerning the nature and limits of reason, the ultimate meaning of history, and the inner meaning and social significance of religion. Pertinent thinkers include Hegel, Marx, Schleiermacher, Kierkegaard, Nietzsche and others.

PHIL/REL 385. Hermeneutics. 3 credits.
This course will examine the main features of hermeneutics with particular emphasis on its contemporary perspectives. Discussion will focus on such themes as human understanding and human finitude, the nature of history and tradition, linguisticity and textuality of experience. Readings may address Gadamer, Ricoeur, Schleiermacher and Diltz. Prerequisite: PHIL 101 or permission of the instructor.

PHIL/REL 386. Buddhist Thought. 3 credits.
Buddhist thought from its origins to the contemporary world in South Asia and East Asia. Emphasis on the understanding of the human condition; analysis of the mind and of the nature of the cosmos; and the expression of Buddhist thought in the fine arts and social activism.

PHIL 390. Special Topics in Philosophy. 3 credits.
Topics for this intermediate-level course may be drawn from any area or period of philosophy chosen by the instructor. The course is designed primarily for Philosophy majors and minors, but any suitably prepared student may take the course with the permission of the instructor. Prerequisite: PHIL 101 or instructor consent.

PHIL 391. Advanced Special Topics in Philosophy. 3 credits.
Topics for this advanced course may be drawn from any area or period of philosophy chosen by the instructor. The course is designed primarily for philosophy majors and minors, but any suitably prepared student may take the course with the permission of the instructor. Prerequisite: six hours of philosophy or consent of the instructor. May be repeated for credit.

PHIL 392. Philosophy of Mind. 3 credits.
An examination of competing theories of the intrinsic nature of mental states and mental processes, including careful consideration of questions concerning the relation between the mind and the physical world. Prerequisite: PHIL 101 or approval of the instructor.

PHIL 394. Self and Identity. 3 credits.
This course will explore the philosophical aspects of personal identity, with particular emphasis on the metaphysics of the self. Other issues considered may include the nature of the soul, the status of self-knowledge and the ethical aspects of personhood. Prerequisite: PHIL 101 or permission of the instructor.

PHIL 396. Philosophy of Physics. 3 credits.
This course examines the philosophical foundations of physics. Some of the philosophical issues explored in the course may include various theories in physics, impact metaphysics, ontology and/or epistemology. Topics may include the nature of space and time, special relativity, general relativity, quantum theory, classical mechanics, thermodynamics and/or cosmology.

PHIL 397. Philosophy of Space and Time. 3 credits.
This course will survey debates about the nature of space and time. Topics may include Zeno's paradoxes, time travel, relativity vs. substantivalism, classical accounts of space and time, and relativistic spacetime.

PHIL 398. Philosophy of Quantum Theory. 3 credits.
Quantum theory describes atoms and particles and is one of the most empirically successful physical theories. However, quantum theory seems to have revolutionary conceptual implications for metaphysics and epistemology. This course offers an introduction to philosophical problems raised by quantum theory. Topics may include the measurement problem, quantum entanglement, different interpretations of quantum mechanics, the Einstein-Podolsky-Rosen (EPR) paradox, and Bell's theorem.

PHIL 410. Philosophy of Science. 3 credits.
This course surveys a number of topics about the nature of science. The topics may include the problem of distinguishing science from pseudoscience, the nature of scientific explanation, the notion of progress in science, and the realism and anti-realist debate.

PHIL 420. Philosophy of Language. 3 credits.
An examination of the central issues in contemporary (mainly 20th century) philosophy of language. Potential topics to be covered include meaning, reference, the nature of language and the nature of truth. Potential philosophers to be examined include Mill, Frege, Russell, Kripke, Lewis and Grice. Prerequisites: PHIL 250 and one other course in philosophy, or permission of the instructor.

PHIL 430. Analytic Philosophy. 3 credits.
An examination of the central issues in contemporary (mainly 20th century) philosophy of language. Potential topics to be covered include meaning, reference, the nature of language and the nature of truth. Potential philosophers to be examined include Mill, Frege, Russell, Kripke, Lewis and Grice. Prerequisite: PHIL 101, PHIL 250 or permission of the instructor.

PHIL 440. Advanced Moral Philosophy. 3 credits.
Class will closely examine recent or historical work in (largely normative) moral philosophy, including at least two of the following: teleology (e.g., virtue theory), deontology (e.g., Kantianism) and consequentialism (e.g., utilitarianism). Prerequisite: PHIL 101, PHIL 330 or approval of the instructor.

PHIL 445. Advanced Political Philosophy. 3 credits.
In a seminar format we will examine, in depth, questions of political philosophy. These may include: autonomy, democracy, freedom, impartiality, universalism, toleration and the normative priority of individuals and communities. Prerequisite: PHIL 101, PHIL 335 or approval of the instructor.

PHIL 460. Topics in Classical Philosophy. 3 credits.
An advanced study of major issues in the writings of one or more thinkers in ancient Greece through the Western medieval period. May be repeated for credit with change of topics. Prerequisite: PHIL 340 or permission of the instructor.

PHIL 465. Topics in Modern Philosophy. 3 credits.
An advanced study of some of the major issues in or the writings of one or more 17th-, 18th- or 19th-century philosophers. Prerequisite: PHIL 101, PHIL 341, PHIL 375 or permission of the instructor. May be repeated for credit when topics vary.

http://www.jmu.edu/catalog/15
PHIL 466. Kant. 3 credits.
An examination of the theory of knowledge and the critique of traditional metaphysics set forth in Kant’s Critique of Pure Reason, and of the ethical theory and the moral metaphysics defended in his Groundwork to the Metaphysics of Morals and Critique of Practical Reason. The course may also more briefly explore some related topics, such as Kant’s views on aesthetics and teleology, or the key ideas of important post-Kantian philosophers like Fichte, Schelling or Hegel. Prerequisite: PHIL 341, PHIL 375 or permission of the instructor.

PHIL 468. Phenomenology. 3 credits.
A study of phenomenological investigation into the fundamental structures and conditions of conscious experience—meaning-laden, first person experience of objects, of events, of one’s self, of other persons, of one’s world, and so forth. The course will devote special attention to the work of Husserl and of Heidegger. Additional authors may be studied, such as Sartre, Merleau-Ponty or Levinas. Prerequisites: PHIL 341, PHIL 344 or PHIL 466 or permission of the instructor.

PHIL 470. Topics in Contemporary Continental Philosophy. 3 credits.
Intensive study of one or two major thinkers or themes in 20th century European philosophy. Possible topics include figures such as Heidegger, Habermas, Foucault or Derrida; or themes such as phenomenology, critical theory, post-structuralism or the critique of Enlightenment ideals. May be repeated for credit. Prerequisite: PHIL 341, PHIL/REL 375 or permission of the instructor.

PHIL 475. Philosophy Seminar. 3 credits.
Seminar topics may be drawn from any area or period of philosophy chosen by the instructor. The course is designed primarily for seniors majoring in Philosophy, but any suitably prepared student may take this course with the permission of the instructor. Prerequisite: Senior philosophy major or permission of the instructor. May be repeated for credit.

PHIL 490. Special Studies in Philosophy. 3 credits.
Designed to give capable students an opportunity to complete independent study in philosophy under faculty supervision.

PHIL 495. Philosophy Course Assistantship. 1-6 credits.
Students participate as course assistants in philosophy. Assistantships provide students with a sense of what it is like to teach a philosophy course by allowing them to work closely with faculty members through different phases of course preparation, presentation and evaluation. Assistantships may also provide opportunities for student assistants to lead discussion and to help their peers review the material outside of the classroom. Prerequisites: May be repeated once if assisting a different course, with six maximum total credit hours for both courses combined. Only three credit hours can apply to the major or minor.

PHIL 499. Honors. 6 credits.
Year course.

Physics

PHYS 105. Foundations of Physics. 1 credit.
An introduction to the study of physics and the physics department. Presentations are given by faculty and students to acquaint the students with current research opportunities in the department and the application of physics to broad spectrum of topics.

PHYS 121. The Physical Nature of Light and Sound (3, 1). 4 credits.
A study of the physical properties of light and sound waves. Topics include production, propagation and spectral analysis of waves. Applications to be covered include musical instruments, sound reproduction, room acoustics, optical instruments (cameras, projectors, lasers), and color in art and nature. The course will include outside-of-class experiential activities. May be used for general education credit.

PHYS 140. College Physics I. 3 credits.
The first semester of a non-calculus sequence in general physics. Topics include principles of mechanics, thermal properties of matter, wave motion and sound. A working knowledge of algebra and trigonometry is required. May be used for general education credit.

PHYS 150. College Physics II. 3 credits.
The second semester of a non calculus sequence in general physics. Topics include electric charges, circuits, magnetism, optics, atomic and nuclear physics. Prerequisite: PHYS 140 with a grade of “C-” or higher.

PHYS 140L*–150L General Physics Laboratories. 1 credit each semester.
These laboratory courses are designed to complement and supplement the PHYS 140-150 and PHYS 240-250 lecture courses. PHYS 140L may be used for general education credit. Prerequisite or corequisite for PHYS 140L: PHYS 140 or PHYS 240. Prerequisite for PHYS 150L: PHYS 140L and either PHYS 140 or PHYS 240. Prerequisite or corequisite for PHYS 150L: PHYS 150 or PHYS 250.

PHYS 215. Energy and the Environment. 3 credits.
Energy use, sources and trends; fossil fuels, heat-work conversions, thermodynamic restrictions and electric power production; nuclear fission reactors and fusion energy; solar energy and technologies; alternative energy sources; energy storage; energy conservation; issues of waste and safety. Environmental, social and economic aspects will be discussed. Not open to ISAT majors scheduled to take ISAT 212 as part of their degree requirements. May be used for general education credit. Prerequisites: One college course in science and one in mathematics.

PHYS 240. University Physics I. 3 credits.
Kinematics, dynamics, energy and momentum conservation, oscillatory motion, fluid mechanics and waves. May be used for general education credit. Corequisites: MATH 232 or MATH 238.

PHYS 246. Data Acquisition and Analysis Techniques in Physics I. 1 credit.
This laboratory supplements PHYS 240 by establishing the experimental basis of physics. Topics include conception, design and performance of experiments in physics emphasizing data acquisition, analysis of experimental data, and the handling of experimental uncertainties. Prerequisite: PHYS 240.

PHYS 247. Data Acquisition and Analysis Techniques in Physics II. 1 credit.
This laboratory completes the introductory physics lab sequence and is designed to supplement the PHYS 240 and PHYS 250 lecture courses. Topics include conception, design and performance of sophisticated experiments in physics, computer simulation of physical processes, analysis of experimental data, including uncertainty estimation, and error propagation. Prerequisites: PHYS 250 and PHYS 248.

PHYS 250. University Physics II. 3 credits.
Electric forces, fields and potentials; capacitance, dielectrics, resistance and DC circuits; magnetic fields, induced electric fields, inductance and AC circuits; geometrical optics, interference, diffraction and polarization. Prerequisite: PHYS 240 with a grade of “C-” or higher. Corequisite: MATH 236.

Rotational kinematics and rotational dynamics; static equilibrium and elasticity; universal gravitation and orbital mechanics; temperature, heat, heat engines, entropy and kinetic theory; Gauss’ law, electric potential and capacitance; magnetic fields, induced electric fields and inductance; displacement current and electromagnetic waves; and the special theory of relativity. Prerequisite: “C” or better in PHYS 250 or PHYS 150. Corequisites: MATH 237 and PHYS 247 or PHYS 150L.

PHYS/MATH 265. Introduction to Fluid Mechanics. 4 credits.
Introduces the student to the application of vector calculus to the description of fluids. The Euler equation, viscosity and the Navier-Stokes equation will be covered. Prerequisites: MATH 237 and PHYS 260.

PHYS 270. Modern Physics. 4 credits.
A course in modern physics, consisting of a discussion of the experimental basis for and fundamental principles of quantum physics, with applications to atomic structure and nuclear physics. Prerequisite: PHYS 260 or permission of the instructor.

PHYS 297. Topics in Physics. 1-4 credits each semester.
An introduction to the design and fabrication of laboratory apparatus using machine tools. Prerequisites: PHYS 250 and permission of the instructor.

PHYS 297. Topics in Physics. 1-4 credits each semester.
Topics in physics at the second year level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

PHYS 326. Biophysics. 3 credits.
Physical models are used to explain biological systems. Topics from biology include cell division, replication, transcription, and translation of DNA, protein folding, and molecular motors. Physics topics include entropy and free energy, diffusion, and statistical mechanics of two state systems. Experimental tools for biophysics are also discussed. Prerequisite: PHYS 150 or PHYS 250.