Health Physics (HPHY)

Courses

HPHY 5511 Accelerator Health Physics: 3 semester hours.
Fundamentals of particle accelerator design and operation. Examination of the potential radiation environment associated with accelerators and health and safety issues of their operation. PREREQ: Senior standing in Health Physics or permission of instructor.

HPHY 5512 Environmental Health Physics: 3 semester hours.
State-of-the-art applied mathematical techniques for estimating the release, transport, and fate of contaminants in multimedia environmental pathways (air, groundwater, terrestrial). Both radiological and non-radiological contaminants will be addressed, with emphasis on radiological contaminants. PREREQ: Permission of instructor.

HPHY 5513 Fundamentals of Industrial Hygiene: 3 semester hours.
Overview on the recognition, evaluation, and control of hazards arising from physical agents in the occupational environment. The exposure consequences associated with agents of major occupational health concerns are considered. PREREQ: Permission of instructor.

HPHY 5516 Introduction to Nuclear Measurements: 3 semester hours.
Lecture/laboratory course emphasizing practical measurement techniques in nuclear physics. PREREQ: CHEM 1112 and PHYS 1111 and PHYS 1113 or PHYS 2211 and PHYS 2213 or equivalent or permission of instructor.

HPHY 5516L Radiation Detect/Measure Lab: 0 semester hours.
Laboratory course emphasizing practical measurement techniques in nuclear physics.

HPHY 5517 Industrial and Aerosol Physics: 3 semester hours.
This course focuses on two distinct subject areas: an elaboration on the details of the ACGIH method of local exhaust-system design, and a study of applied aerosol physics based upon trajectory analysis. PREREQ: Permission of instructor.

HPHY 5518 Non-ionizing Radiation Protection: 3 semester hours.
Occupational safety and heath issues of human exposure to non-ionizing radiation. Topics include health concerns and safety strategies developed for extremely low frequency, microwave, ratio-frequency, ultraviolet, infrared, laser radiation, and soundwaves. PREREQ: Permission of instructor.

HPHY 5519 Radiological Emergency Planning: 3 semester hours.
Radiological emergency planning for facilities ranging from reactors and other major nuclear facilities to transportation accidents and smaller-scale nuclear accidents. Topics include planning, coordination, "exercises," exposure pathways, modeling, measurement, control, decontamination, and recovery. PREREQ: Permission of instructor.

HPHY 5520 Reactor Health Physics: 3 semester hours.
Introduction to reactor physics; nuances peculiar to reactor health physics; reactor designs. Critiques of exposure pathways accidents, decommissioning, contamination control, and emergency planning examine radiation safety approaches within the nuclear fuel cycle. PREREQ: Permission of instructor.

HPHY 5531 Radiation Physics I: 3 semester hours.
Atomic and nuclear structure, series and differential-equation descriptions of radioactive decay, physical theory of the interaction of radiation with matter suitable for the discipline of Health Physics. PREREQ: Permission of instructor.

HPHY 5532 Radiation Physics II: 3 semester hours.
Continuation of HPHY 5531 considering dosimetric quantities/units, theory and technology of radiation detection and measurement, and radiobiology important to an advanced understanding of radiation protection. PREREQ: HPHY 5531 or permission of instructor.

HPHY 5533 External Dosimetry: 3 semester hours.
A lecture course emphasizing external radiation protection including study of point kernel techniques, monte carlo modeling, and NCRP-49 methods. Also discussed are external dosimetry measurement techniques. PREREQ: HPHY 5532 or permission of instructor.

HPHY 5534 Internal Dosimetry: 3 semester hours.
A lecture course emphasizing internal radiation protection including studies of ICRP-2, ICRP-26&30, ICRP-60&66, and MIRD methods of internal dosimetry. PREREQ: HPHY 5533 or permission of instructor.

HPHY 5555 Topics in Health Physics I: 2 semester hours.
A lecture/seminar course covering special topics in Health Physics such as state and federal regulations, waste disposal methodology, and emergency procedures. PREREQ: HPHY 5532 or permission of instructor.

HPHY 5556 Topics in Health Physics II: 2 semester hours.
A continuation of HPHY 5555. A lecture/seminar course covering special topics in Health Physics such as state and federal regulations, waste disposal methodology, and emergency procedures. PREREQ: HPHY 5532 or permission of instructor.

HPHY 5588 Advanced Radiobiology: 3 semester hours.
An advanced-level class covering aspects of molecular radiobiology, teratogenesis, oncogenesis, and acute radiation illnesses. It also considers nonstochastic radiation effects and the epidemiology of radiation exposures. Equivalent to BIOL 5588. PREREQ: Permission of instructor.

HPHY 5590 ABHP Review: 3 semester hours.
A course for practicing professionals aimed at the development and improvement of skills. May be graded S/U. PREREQ: Permission of the instructor.

HPHY 5599 Experimental Course: 1-6 semester hours.
This course is not described in the catalog. The course title and number of credits are announced in the class schedule by the scheduling department. Experimental courses may be offered no more than three times with the same title and content.

HPHY 6605 Radiological Environmental Monitoring and Surveillance: 3 semester hours.
Advanced considerations in the design of monitoring programs. Sampling and analytical measurement programs for specific radionuclides and sources with emphasis in quality assurance.

HPHY 6610 Radiation Regulations: 3 semester hours.
Covers regulation of ionizing and non-ionizing radiation. Historical, biological, and legal foundations; federal regulations; state regulations; nuclear fuel cycle; emergency response; academic and medical facilities; transportation; accelerators; NORM/NARM; non-ionizing radiation. PREREQ: Permission of instructor.

HPHY 6650 Thesis: 1-12 semester hours.
Thesis. 1-12 credits. May be repeated. Graded S/U.

HPHY 6699 Experimental Course: 1-6 semester hours.
This course is not described in the catalog. The course title and number of credits are announced in the class schedule by the scheduling department. Experimental courses may be offered no more than three times with the same title and content.

HPHY 8850 Doctoral Dissertation: 1-12 semester hours.
Research toward and completion of the dissertation. 1-12 credits. May be repeated. Graded S/U.