Medical/Health Physics Track Courses
2007-2008

Medical/Health Physics - Environmental Health Sciences

Core Courses (all required)

Course Number	Course Name	Points	Semester
P6103	Biostatistics (R)	3	Spring, Summer, Fall
P6300	Environmental Health Sciences (R)	3	Spring, Fall
P6400	Principles of Epidemiology (R)	3	Summer, Fall
P6530	Issues and Approaches in Health Policy and Management (R)	3	Spring, Fall
P6700	Introduction to Sociomedical Sciences (R)	3	Spring

Fall Semester

Course Number	Course name	Points	Semester
P6103/4	Biostatistics[1] (R)	3	Fall 1st Yr
P6300	Environmental Health Sciences (R)	3	Fall 1st Yr
P6301	EHS Applications (R)	1	Fall 1st Yr
E4500	Health Physics (R)	3	Fall 1st Yr
E4600	Fundamentals of Dosimetry (R)	2	Fall 1st Yr
P6330	Radiation Science (R)	3	Fall 1st Yr

Spring Semester

Course Number	Course Name	Points	Semester
P6700	Introduction to Sociomedical Sciences[2] (R)	3	Spring 1st Yr
P6530	Issues and Approaches in Health Policy and Management[3] (R)	3	Spring 1st Yr or Fall 2nd Yr
P9335	Radiation Therapy Physics (R)	3	Spring 1st Yr
P9330	Diagnostic Radiology Physics (R)	3	Spring 1st Yr
P9319	Clinical Nuclear Medicine Physics (R)	3	Spring 1st Yr
P9350	Masters Essay I[4] (must follow with Masters Essay II in Spring '08) (R)	1	Spring 1st Yr
-	Anatomy & Physiology course- see advisor to select[5]	3	Spring 1st Yr

[1] Students should take the exam to place into P6104, Advanced Biostatistics. If they do not pass, they can take P6103

[2] P6700 Introduction to Sociomedical Sciences (3) – *see Ms. Andrea Constancio*
*Non-SMS students may substitute the following courses (check semester schedule for availability of individual courses): P6000, P6001 (General Public Health); P9305 (Env Hlth Sciences); and P6503, P6508 (Hlth Policy & Mgmt). It is sometimes possible for students with advanced backgrounds in social sciences (i.e. graduate level coursework) to substitute Sociomedical Sciences courses P8704, P8755 or P8767 with permission from the Course Director. No other Sociomedical Sciences courses may be used to meet the core requirement.

[3] HPM Core can be taken in either the Spring of 1st year or Fall of 2nd year

[4] As your final capstone requirement, you must complete either Masters Essay I AND II in your final 2 semesters OR Topics in your final semester

[5] An anatomy & physiology is required but can be taken at any time during the degree program

Summer Semester

No Registration Required	Practicum[6] Please see advisor more details on the practicum experience	0	2nd Summer

Second Fall Semester

***ALL STUDENTS SHOULD COMPLETE ANY REMAINING CORE COURSES IF THIS IS FINAL SEMESTER IN ADDITION TO TAKING TOPICS OR MASTERS ESSAY II.**

P6400	Principles of Epidemiology (R)	3	Fall 2nd Yr
P9351	Masters Essay II (if you completed Masters Essay I) (R)	2	Fall 2nd Yr
P9300	Topics in EHS (R if you have not taken Masters Essay) (R)	4	Fall 2nd Yr
P8333	Radiation Oncology (E)	3	Fall 2nd Yr
P8340	Diagnostic Radiology (E)	3	Fall 2nd Yr
P8365	Nuclear Medicine (E)	3	Fall 2nd Yr
P8390	Health Physics (E)	1-6	Fall 2nd Yr

(R) = REQUIRED COURSE
(E) = Elective

ADDITIONAL INFORMATION:

*STUDENTS MAY TAKE UP TO 4 OUTSIDE DEPARTMENT COURSES

**SUBSTITUTIONS ARE AVAILABLE FOR SMS CORE COURSE. PLEASE SEE THE PROGRAM MANAGER LISTED BELOW FOR MORE INFORMATION

P6700 Introduction to Sociomedical Sciences (3) – see Ms. Andrea Constancio

[6] Please meet with your advisor or Dr. Wuu to discuss practicum opportunities and requirements

Medical/Health Physics Program: Course Selection

P6330 Radiation Science.
(3 points)
The purpose of this one-semester course is to familiarize the student with ionizing radiation: what is it, the type of instrumentation used to detect it, what are its biological effects what risks and what benefits are involved in the societal use of radiation (medical applications, laboratory techniques, nuclear energy). There are no prerequisites for attending this course other than an open mind, curiosity and high-school level scientific background. Upon successful completion of this course the student is expected to be able to recognize a situation involving radiation, reason out how to use radiation sources safely, and in general be able to carry out an intelligent (unbiased + educated) discussion on radiation issues. There will be two take-home examinations (mid-term and final).

P8310 Health Physics.
(3 points)
Introduction to fundamental principles of health physics. Detailed discussion of aspects of nuclear physics important in health physics, radiation dosimetry in biological systems, health physics instrumentation. Guest lecturers and audiovisuals are included. Final examination and one research paper on subject of student's choice.

P8330 Radiation Physics. Thurs.. 2:00-5:00 p.m.
(3 points)
Required for all other Medical/Health Physics courses.
Introduction to atomic and nuclear physics and the quantum mechanics interaction of ionizing radiation with matter. Other subjects include radiation dosimetry, instrumentation, radiation protection (internal and external), and, briefly, the chemical and biological effects of radiation. Material is at beginning graduate level. Exercises, group work. Mid-term and final examination.

P8333 Radiation Oncology Practical Experience.
(3 points)
Application of medical physics to cancer therapy. One day weekly in a hospital setting under close supervision. dosimetry, calibrations, and treatment planning. Four to six clinically oriented laboratory-type projects will be assigned.

P8340 Diagnostic Radiology Applications.
(3 points)
Practical applications of diagnostic radiology for various measurements and equipment assessments. Includes instruction and supervised practice in radiation safety procedures, image quality assessments, regulatory compliance, radiation dose evaluations and calibration of equipment. Topics include X-ray generator calibration, focal spot measurements, half-value layer measurements, and others. Objective is familiarization in routine operation of test instrumentation required in diagnostic medical physics. Research reports. Dr. Nickoloff.

P8360 Basic Experimental Methods & Nuclear Instrumentation.
(3 points)
Basic experimental techniques, atomic and nuclear devices, and instrumentation common to many areas of medical and health physics. Combines lectures on the theory of operation of basic nuclear instruments with hands-on operation. Emphasis on laboratory performance by students of required experiments and some elective experiments based on specific interests.

P8365 Nuclear Medicine Applications.
(3 points)
Practical applications of nuclear medicine theory and application for processing and analysis of clinical images and radiation safety and quality assurance programs. Topics may include tomography, instrumentation, functional imaging and the kinetics and biodistribution of radiopharmaceuticals. Research reports.

P9330 Diagnostic Radiological Physics.
(3 points)
Description of X-ray generators and tubes followed by survey of image quality concepts, introductory fluoroscopy, image intensifiers, and cine systems. The second part covers mammography, CT scanners, ultrasound and magnetic resonance imaging. Mid-term and final examinations.

P9335 Radiation Therapy Physics.
(3 points)
Review of X-ray production and fundamentals of nuclear physics and radioactivity. Detailed analysis of radiation absorption and interactions in biological materials as specifically related to radiation therapy and radiation therapy dosimetry. Surveys of use of teletherapy isotopes and X-ray generators in radiation therapy plus the clinical use of interstitial and intracavitary isotopes. Principles of radiation therapy treatment planning and isodose calculations. Problem sets taken from actual clinical examples are assigned. Examination. Dr. Wuu