

## Course Requirements for M.S. and Ph.D. Degrees – Fall 2008

**Core 1: Mandatory requirements – these 4 courses plus 2 from the Core 2 list.**

BMEDPHY 200A – Physics and Chemistry of Nuclear Medicine – 4 units (Winter)

BMEDPHY 204 – Introduction to Radiation Biology – 4 units (Winter)

BMEDPHY 205 – Physics of Diagnostic Radiobiology – 4 units (Fall)

BMEDPHY 216 – Fundamentals of Dosimetry – 4 units (Fall)

**Core 2: Two of the following Core 2 courses may fulfill the six course core requirement.**

BMEDPHY 203 - Physics of Radiation Therapy – 4 units (Spring)

BMEDPHY 219 – Physics of Magnetic Resonance Imaging – 4 units (Spring)

BMEDPHY M248 - Introduction to Molecular Imaging – 4 units (Winter)

BMEDPHY 223 - Radiation Biology Seminar – 4 units (Spring)

### **Required Courses:**

BMEDPHY 217 - Statistics and Data Analysis in Biomedical Physics – 2 units (Fall)

BMEDPHY 218 - Radiological Functional Anatomy – 2 units (Fall)

BMEDPHY 227 - Current & Future Role of Biomedical Physics in Human Disease -4 units (Winter)

BMEDPHY 260A - Seminars in Biomedical Physics – 1 unit (Fall)

BMEDPHY 260B - Seminars in Biomedical Physics – 1 unit (Winter)

BMEDPHY 260C - Seminars in Biomedical Physics – 1 unit (Spring)

### **Specialty Area Courses**

***Medical Imaging.*** Minimum course requirement of 60 hours. The courses for the medical imaging specialty include the six core courses, and six required courses, as well as the medical imaging specialty courses (Biomedical Physics 209 and 210). Appropriate elective courses are selected by the student and the advisor.

***Molecular Imaging.*** Minimum course requirement of 60 hours. The molecular imaging specialty includes the core and required courses within the department, graduate courses from physics, engineering, chemistry/biochemistry, biological chemistry, pharmacology, and biomathematics, and research study and seminar courses.

***Radiation Biology.*** Students must demonstrate competence in the subject matter covered in the core courses. Because of the breadth of radiation biology and experimental radiation oncology, it is not feasible to design a single curriculum for all students. Instead, additional coursework is recommended by faculty in accordance with specific needs.

***Therapeutic Medical Physics.*** Students must demonstrate competence in the subject matter covered in the core courses. In addition, students are required to take the three clinical rotations (Biomedical Physics 202A-202B-202C). Additional coursework is recommended by faculty in accordance with students' specific needs.

## First and Second Year Graduate Students –Sample / Typical Schedule

### Biomedical Physics Graduate Studies

#### First Year Graduate Students

FALL 2008	WINTER 2008	SPRING 2008
<i>Core 1: 205</i> Physics of Diagnostic Radiology (4 units)	<i>Core 1: 200A</i> Physics & Chem. of Nuc. Med. (4 units)	<i>Core 2: 203</i> Physics of Radiation Therapy (4 units)
<i>Core 1: 216</i> Fundamentals of Dosimetry) (4 units)	<i>Core 1: 204</i> Introduction Radiation Biology (4 units)	<i>Core 2: 219</i> Principles & Applications of MRI (4 units)
<i>Required: 217</i> Statistics & Data Analysis (2 units)	<i>Required: 227</i> <i>Current and Future Role of Biomedical Physics in Human Disease</i> (4 units)	<i>Core 2 : 223</i> Radiation Biology Seminar (4 units)
<i>Required: 218</i> Radiologic Functional Anatomy (2 units)	<i>Core 2: M248</i> Intro to Biological Imaging (4 units)	<i>Required: 260C Seminar: Biomedical Physics</i> (1 unit)
<i>Required: 260A</i> Seminar: Biomedical Physics (1 unit)	<i>Required: 260B</i> Seminar: Biomedical Physics – (1 unit)	<i>Electives:</i> (200B, 207, 208B, 209, M234, 268, M424)

#### Second Year Graduate Students

FALL	WINTER	SPRING
<i>Electives:</i> (222, M285)	<i>Electives:</i> (M230, M266)	<i>Electives:</i> (200B, 207, 208B, 209, 210, M234, 268, M424)

Graduate Elective Courses Offered		
FALL	WINTER	SPRING
<i>222</i> Advances in Medical Magnetic Resonance: Clinical MR Spectroscopy & Fast MRI Techniques – 4 units	<i>M230</i> Computed Tomography: Theory and Applications – 4 units	<i>200B</i> Nuclear Medicine Instrumentation 4 units
<i>M285</i> Functional Neuroimaging: Techniques & Applications – 4 units	<i>M266</i> Advanced MRI – 4 units	<i>207</i> Monte Carlo Methods with Applications for the Radiological Sciences – 4 units
		<i>208B</i> Medical Physics (Therapy Lab) 4 units
		<i>209</i> Digital Techniques in Radiological Sciences – 4 units
		<i>210</i> Computer Vision in Medical Imaging - 4 units
		<i>C234</i> Ethics in Biomedical Physics Research – 2 units
		<i>268</i> Radiopharmaceutical Chemistry (+2 hr. lecture/discussion-TBA) – 4 units
		<i>M424</i> Functional MRI Journal -