Pharmaceutics and Drug Delivery Systems

Students studying pharmaceutics and drug delivery will be thoroughly exposed to the fundamentals of physical pharmacy and pharmaceutics in addition to being trained in several more specialized areas such as:

- Novel drug delivery systems
- Nanomedical technologies
- Physical pharmacy
- Biopharmaceutics and pharmacokinetics

With exposure to these various facets of pharmaceutics, successful graduates are poised to understand and assimilate the field of modern pharmaceutics. A PhD degree in pharmaceutics is a research degree. While course work plays an important role, students become a real participant in the science of pharmaceutics in the laboratory. Faculty research covers a broad range of scientific interests, including pharmacokinetic toxicodynamics of anticancer agents, use of biomaterials and synthetic polymeric systems in design of drug delivery systems, passive and active targeting of therapeutic agents, cardiovascular targeting of drugs, novel delivery systems for proteins and peptides, and mathematical modeling of endogenous compounds.

Interdisciplinary Option

The interdisciplinary option is intended to meet the needs of students interested in combining courses and skills from two areas of specialization. At least one of the specialization areas must come from within the college. The second area may come from a department in another college at Northeastern University, such as biology, chemistry, or engineering. Students electing the interdisciplinary option must fulfill the same requirements as all other PhD candidates.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Milestones

Qualifying examination
Annual review
Dissertation committee
Dissertation proposal
Dissertation defense

Core Requirements

A grade of C– or higher is required in each course.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHSC 5100</td>
<td>Cellular Physiology</td>
<td></td>
</tr>
<tr>
<td>PHSC 6212</td>
<td>Research Skills and Ethics</td>
<td></td>
</tr>
<tr>
<td>or BIOL 6381</td>
<td>Ethics in Biological Research</td>
<td></td>
</tr>
<tr>
<td>PHSC 6214</td>
<td>Experimental Design and Biostatistics</td>
<td></td>
</tr>
<tr>
<td>PHSC 6216</td>
<td>Human Physiology and Pathophysiology</td>
<td></td>
</tr>
<tr>
<td>PMST 6250</td>
<td>Advanced Physical Pharmacy</td>
<td>2</td>
</tr>
<tr>
<td>PMST 6252</td>
<td>Pharmacokinetics and Drug Metabolism</td>
<td>3</td>
</tr>
<tr>
<td>PMST 6254</td>
<td>Advanced Drug Delivery System</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

Complete 7–12 semester hours from the following subject areas:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL, BIOT, CHEM, NNMD, PHSC, PMCL, PMST</td>
<td>7-12</td>
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Research and Dissertation

Qualifying Examination

PHSC 9840 Doctoral Training and Research 1

Proposal Preparation

PHSC 9681 Doctoral Proposal 2

Dissertation

Complete the following (repeatable) course twice: 6

PHSC 9990 Dissertation

Program Credit/GPA Requirements

45 total semester hours required
Minimum 3.000 GPA required