PhD in Biomedical Sciences

Admission Requirements

In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- **Baccalaureate Field** No restrictions. However, applicants must have a satisfactory record of courses in biology, inorganic and organic chemistry, and at least one year of physics and of mathematics.
- **Grade Point Average** At least 2.75/4.00 for the final 60 semester hours of undergraduate study. Preference is given to applicants with a GPA of greater than 3.00/4.00.
- **Tests Required** None.
- **Minimum English Competency Test Score** (test scores cannot be more than two years old)
  - TOEFL: 80, with subscores of Reading 19, Listening 17, Speaking 20, and Writing 21 (iBT Test); 60, with subscores of Reading 19, Listening 17, Writing 21 (revised Paper-Delivered Test), OR,
  - IELTS: 6.5, with subscores of 6.0 for all four subscores, OR,
  - PTE-Academic: 54, with subscores of Reading 51, Listening 47, Speaking 53, and Writing 56.
- **Letters of Recommendation** Three required.
- **Personal Statement** Required. Personal statement must include a description of past research experience and motivation for obtaining a doctorate degree in Biomedical Sciences.
- **Other Requirements** Preference is given to applicants with a documented record of research accomplishments.

Degree Requirements

In addition to Graduate College minimum requirements, students must meet the following program requirements:

**MS in Biomedical Sciences**

There will be no direct admission to the MS. Doctoral students who fail to progress beyond year 2 (including failing the preliminary exam) or who choose to discontinue research upon passing the preliminary exam will be allowed to petition for the MS.

- **Minimum Semester Hours Required** 36-38
- **Course Work**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEMS 504</td>
<td>Research Methods I (2 hours)</td>
<td></td>
</tr>
<tr>
<td>GEMS 505</td>
<td>Research Methods II (2 hours)</td>
<td></td>
</tr>
<tr>
<td>GEMS 506</td>
<td>GEMS Research Rotation (8 hours in total)</td>
<td></td>
</tr>
<tr>
<td>GEMS 521</td>
<td>Foundations of Biomedical Sciences I</td>
<td>6</td>
</tr>
<tr>
<td>GEMS 522</td>
<td>Foundations of Biomedical Sciences II</td>
<td>6</td>
</tr>
</tbody>
</table>

**Concentration Core**

Select one of the following sets of courses (5-7 hours):

- **Cancer Biology**

**PhD in Biomedical Sciences**

- **Minimum Semester Hours Required**: 96 from the baccalaureate
- **Course Work**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEMS 504</td>
<td>Research Methods I (2 hours)</td>
<td></td>
</tr>
<tr>
<td>GEMS 505</td>
<td>Research Methods II (2 hours)</td>
<td></td>
</tr>
<tr>
<td>GEMS 506</td>
<td>GEMS Research Rotation (8 hours in total)</td>
<td></td>
</tr>
<tr>
<td>GEMS 521</td>
<td>Foundations of Biomedical Sciences I</td>
<td>6</td>
</tr>
<tr>
<td>GEMS 522</td>
<td>Foundations of Biomedical Sciences II</td>
<td>6</td>
</tr>
</tbody>
</table>

**Concentration Core**

Select one of the following sets of courses (5-7 hours):

- **Cancer Biology**
GEMS 551  Foundations of Cancer Biology  
PATH 511  Pathobiology of Cancer

**Cell Biology and Regenerative Medicine**
- PCOL 540  Ion Channels: Structure, Function, Pharmacology and Pathology
- PCOL 560  Graduate Pharmacology

**Integrative and Translational Physiology**
- PHYB 518  Cardiovascular Pathophysiology
- PHYB 586  Cell Physiology

**Microbiology, Immunity and Inflammation**
- MIM 554  Molecular Aspects of Microbiology
- Select one of the following:
  - MIM 553  Molecular Biology of Viruses
  - MIM 551 & MIM 560  Advanced Immunology and Microbial Pathogenesis

**Molecular Biology and Genetics**
- BCMG 513  Principles of Structure Determination and Analysis
- BCMG 575  Topics in Biochemistry and Molecular Genetics

**Neurobiology**
- NEUS 501  Foundations of Neuroscience I
- NEUS 502  Foundations of Neuroscience II

**Elective Courses**
Students will be required to complete a minimum of 3 hours of graduate-level course work. They may choose one of the courses offered by any concentration (except the ones they are affiliated with) to fulfill this requirement.

- **Preliminary Examination**: Required. During the second year of graduate study, students must pass a preliminary examination in a format specified by the GEMS Program. This exam has three components. First, students will prepare a preproposal (a three-page description of research project), followed by submission of a research proposal (following the NIH F31 proposal guidelines), and an oral defense of the proposal. The written proposal will be reviewed by a preliminary exam committee consisting of five GEMS faculty. Students will be required to present and defend the proposal during oral examination.

- **Dissertation**: Required. Students must earn at least 52 hours in one of the following research courses: ANAT 599, BCMG 599, GEMS 599, MIM 599, PATH 599, PCOL 599, or PHYB 599.

- **Other Requirements**: Seminar Series (6 hours in total). Students may register for any one of the following courses: ANAT 595, BCMG 595, MIM 595, PATH 595, PCOL 595, or PHYB 595.

- **Medical Scientist Training Program (MSTP)**: Students with an MD earned in the United States or who are working toward one at UIC may use medical science courses to fulfill the Year 1 course work requirements (GEMS 504, GEMS 505, GEMS 506, GEMS 521, and GEMS 522). MSTP students will complete all other degree requirements: the concentration core, seminar series, electives, preliminary examination, and dissertation.