

# 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.
- **English Proficiency** Additional information on the English proficiency test requirement for international students can be found on the [UIC Admissions website](#). Minimum test scores for this program are:

Exam	Score	Reading	Listening	Speaking	Writing
TOEFL iBT	80	19	17	20	21
IELTS Academic	6.5	6.0	6.0	6.0	6.0
PTE Academic	54	51	47	53	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
- **Coursework**

Code	Title	Hours
<b>Required Courses</b>		
GEMS 504	Research Methods I (2 hours)	
GEMS 505	Research Methods II (2 hours)	
GEMS 506	GEMS Research Rotation (8 hours in total)	
GEMS 521	Foundations of Biomedical Sciences I (6 hours)	
GEMS 522	Foundations of Biomedical Sciences II (6 hours)	

### 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 560	Graduate Pharmacology
GEMS 515	Receptor Pharmacology and Cell Signaling

#### Integrative and Translational Physiology

PHYB 518	Cardiovascular Pathophysiology
PHYB 531	Metabolism: An Integrated Multi-Organ Crosstalk (with approval from DGS)
PHYB 562	Therapeutic Development – Clinical Trials (with approval from DGS)
PHYB 586	Cell Physiology

#### Microbiology, Immunity and Inflammation

MIM 554	Molecular Aspects of Microbiology
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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 575	Topics in Biochemistry and Molecular Genetics
BCMG 594	Special 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 coursework. They may choose one of the courses offered by any concentration (except the ones they are affiliated with) to fulfill this requirement.

- **Comprehensive Examination:** None
- **Thesis, Project, or Coursework-Only Options:** Coursework only. MS students are not required to produce a thesis from their mentored research or research rotation. Although mentored research is not required, it is expected that most MS students will participate in mentored research.
- **Other Requirements:** Seminar Series (4 hours in total). Students may register for any one of the following courses: GEMS 595, PATH 595, PCOL 595, PHYB 595, MIM 595, BCMG 595, or ANAT 595.

## PhD in Biomedical Sciences

- **Minimum Semester Hours Required:** 96 from the baccalaureate
- **Coursework:**

Code	Title	Hours
<b>Required Courses</b>		
GEMS 504	Research Methods I (2 hours)	
GEMS 505	Research Methods II (2 hours)	

GEMS 506	GEMS Research Rotation (8 hours in total)
GEMS 521	Foundations of Biomedical Sciences I (6 hours)
GEMS 522	Foundations of Biomedical Sciences II (6 hours)

### 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 560	Graduate Pharmacology
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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 coursework. They may choose one of the courses offered by any concentration (except the ones they are affiliated with) to fulfill this requirement.

- Other Requirements:** Seminar Series (6 hours in total). Students may register for any one of the following courses: GEMS 595, 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 coursework 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.
- 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.