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 iBT** 80, with subscores of Reading 19, Listening 17, Speaking 20, and Writing 21, **OR**,
  - **IELTS Academic** 6.5, with 6.0 in each of the 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 additional 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
Required Courses		
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	
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
Required Courses		
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
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.	

- **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: 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.