BIOPHYSICS AND QUANTITATIVE BIOLOGY

http://www.biophysics.illinois.edu

Center Director: Satish Nair
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1110 West Green Street
Urbana, IL 61801
(217) 333-1630
E-mail: biophysics@life.illinois.edu

Major: Biophysics and Quantitative Biology
Degrees offered: M.S. and Ph.D.

Medical Scholars Program: Doctor of Philosophy (Ph.D.) in Biophysics and Quantitative Biology and Doctor of Medicine (M.D.) through the Medical Scholars Program (http://www.med.illinois.edu/mdphd).

Graduate Degree Programs
Biophysics and Quantitative Biology offers a doctor of philosophy degree program. In rare circumstances and with special permission of the director and advisor, a current student may obtain a terminal master’s degree after meeting the requirements of the degree. Biophysics students are not admitted initially into the program for a master’s degree. Opportunity also exists for specializing in computational science and engineering within the department’s graduate program via the Computational Science and Engineering (CSE) Concentration (http://www.cse.illinois.edu/education/minor-and-concentration/graduate-concentration).

Admission
The objective of the program in biophysics is to give students sufficient training in physics, chemistry, and biology to enable them to apply the conceptual, instrumental, and mathematical approaches of the physical sciences for solving biological problems. The curriculum is broadly based and provides sufficient flexibility for students entering with either previous training in the physical sciences or for students with a background in biology and some experience in the physical sciences.

Admission requirements are usually one year of college biology, one year of college physics, chemistry through organic chemistry, and mathematics through calculus; however deficiencies in one of these areas can be corrected during the first two years of study. Most applicants who are accepted into the program have general Graduate Record Examination (GRE) scores in the 70%-90% range. The Biophysics and Quantitative Biology Program does not require the subject GRE for admission. The Test of English as a Foreign Language (TOEFL iBT) or IELTS is required for international applicants.

Please refer to the Biophysics and Quantitative Biology Admissions webpage (http://www.life.illinois.edu/biophysics/program/admissions.html) for additional information and application deadlines.

Medical Scholars Program
The Medical Scholars Program permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Biophysics and Quantitative Biology. Students may apply to the Medical Scholars Program prior to beginning graduate school or while in the graduate program. Applicants to the Medical Scholars Program must meet the admissions standards for and be accepted into both the doctoral graduate program and the College of Medicine. Students in the dual degree program must meet the specific requirements for both the medical and graduate degrees. On average, students take eight years to complete both degrees. Further information on this program is available by contacting the Medical Scholars Program, 125 Medical Sciences Building, (217) 333-8146 or at www.med.illinois.edu/msp (http://www.med.illinois.edu/msp). Please note that applications to the Medical Scholars Program are not being accepted at this time.

Graduate Teaching Experience
Experience in teaching is considered a vital part of the graduate program and is required as part of the academic work of all Ph.D. candidates in this program. Every biophysics student is required to serve as a teaching assistant for one semester at the quarter time level or higher.

Faculty Research Interests
Over 40 faculty members from the Schools of Molecular and Cellular Biology, Chemical Sciences, and Medicine, and the Colleges of Engineering and Veterinary Medicine, are affiliated with the Center for Biophysics and Quantitative Biology. Faculty interests range from experimental biophysics (single molecule spectroscopy, protein and RNA folding, molecular dynamics, cellular biophysics, imaging, etc.) to computational and theoretical biophysics (utilizing a wide range of computer platforms to simulate diverse biological phenomena at many levels as well as bioinformatics). Individual faculty interests can be found on the Biophysics web site (http://biophysics.illinois.edu/people/faculty).

Facilities and Resources
Center faculty and students have access to world-class research facilities at the University of Illinois, including the Beckman Institute, the Carl R Woese Institute for Genomic Biology, Blue Waters Sustained Petascale Computing, the National Center for Supercomputing Applications, the Biomedical Imaging Center, the Roy J Carver Biotechnology Center, and the School of Chemical Sciences’ Mass Spectroscopy Center and Electron Paramagnetic Resonance (EPR) Research Center.

Financial Aid
All incoming graduate students in biophysics will be supported by the Center for the first semester in the program. Continuing support for subsequent years will be granted as long as students remain in good standing and continue to make satisfactory academic progress, contingent upon the availability of funds. This support can be in the form of research assistantships, teaching assistantships, traineeships, or fellowships. After the first semester of study, most students are supported directly by their research advisor in the form of a research assistantship.
Master of Science in Biophysics and Quantitative Biology

Thesis Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOP 401</td>
<td>Introduction to Biophysics (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Elective hours approved by Center Director to bring total hours to</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>BIOP 599</td>
<td>Thesis Research (4 min applied toward degree)</td>
<td>4</td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

Other Requirements

Other requirements may overlap

Minimum 500-level Hours Required 12
Overall:
Minimum GPA: 3.0

For additional details and requirements refer to the department’s Student Handbook (http://biophysics.illinois.edu/program/courses) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).

Non-Thesis Option

<table>
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<th>Hours</th>
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<tbody>
<tr>
<td>BIOP 401</td>
<td>Introduction to Biophysics (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Research/Project Hours (4 min applied toward degree)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective hours approved by Center Director to bring total course work hours to</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

Other Requirements

Other requirements may overlap

Minimum 500-level Hours Required 12
Overall:
Minimum GPA: 3.0

For additional details and requirements refer to the department’s Student Handbook (http://biophysics.illinois.edu/program/courses) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).

Doctor of Philosophy in Biophysics and Quantitative Biology

The Ph.D. degree is a research degree, and the program is designed with a major emphasis on individual research.

A qualifying examination is offered each spring. This qualifier must be passed by the end of the second year. By the end of the third year, after formulating a definite research problem, the student takes a preliminary examination where the chosen research topic is presented to the student’s faculty committee. The committee also examines the candidate on their chosen general research area. The Ph.D. thesis is based on original work of the student and is defended at a final public examination. The thesis and the exam must demonstrate a thorough knowledge of theory and techniques in one of the areas of biophysics.

<table>
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<tr>
<td>BIOP 401</td>
<td>Introduction to Biophysics (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>BIOP 581</td>
<td>Lab Rotation I</td>
<td>2</td>
</tr>
<tr>
<td>BIOP 582</td>
<td>Lab Rotation II</td>
<td>2</td>
</tr>
<tr>
<td>BIOP 583</td>
<td>Lab Rotation III</td>
<td>2</td>
</tr>
<tr>
<td>BIOP 586 &amp; BIOP 590</td>
<td>Special Topics in Biophysics and Individual Topics</td>
<td>10</td>
</tr>
<tr>
<td>BIOP 595</td>
<td>Biophysics Seminars (Sections A &amp; B)</td>
<td>3</td>
</tr>
<tr>
<td>BIOP 599</td>
<td>Thesis Research (32 max applied toward degree)</td>
<td>32</td>
</tr>
</tbody>
</table>
| Two 500-level courses from the pre-approved Biophysics course list
| One computational or experimental lab course – based on the student’s research focus
| MCB 580 | Res Ethics & Responsibilities                         | 1     |
| Total Hours |                                                   | 64    |

Other Requirements

Other requirements may overlap

Students are required to teach for a minimum of one semester during their graduate career

Masters Degree Required in Biophysics and Quantitative Biology No, but Masters level requirements must be met (32 additional hours for Admission to PhD min)

Qualifying Exam Required Yes
Preliminary Exam Required Yes
Final Exam/Dissertation Defense Required
Dissertation Deposit Required Yes
Minimum GPA: 3.0

For additional details and requirements refer to the department’s Student Handbook (http://biophysics.illinois.edu/program/courses) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).