BIOPHYSICS, PH.D.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirements#text), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</table>

Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

**Required Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOCHEM/ CHEM 665</td>
<td>Biophysical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 668</td>
<td>Biophysical Spectroscopy ¹</td>
<td>3</td>
</tr>
</tbody>
</table>

**Biophysics Additional Courses** ²

Students must take at least 2 additional classes from different categories from the following list of classes (alternative classes may be substituted with approval from the Biophysics Program Steering Committee):

**Structure**

- BIOCHEM 601 Protein and Enzyme Structure and Function
- BIOCHEM 625 Mechanisms of Action of Vitamins and Minerals
- CHEM 622 Organic Analysis
- CHEM 675 Introductory Quantum Chemistry
- ONCOLOGY 673 Purification and Characterization of Protein and Protein Complexes

**Modeling**

- CHEM 661 Chemical and Statistical Thermodynamics
- MATH/B M I/BIOCHEM/BMOLCHEM 609 Mathematical Methods for Systems Biology

**Molecular Biology**

- BIOCHEM/GENETICS/MICROBIO 612 Prokaryotic Molecular Biology
- BIOCHEM/GENETICS/MD GENET 620 Eukaryotic Molecular Biology

**Neuroscience**

- NTP/NEURODPT 610 Cellular and Molecular Neuroscience

**Spectroscopy/Microscopy**

Assessments and Examinations

Students are required to complete an oral preliminary exam. The oral exam should be completed no later than the end of the student’s third fall semester in the program. This exam consists of an oral defense of a written research proposal. The format of the research proposal is based on the format for an NIH F31 predoctoral grant application. If the student feels they need more time to complete the oral exam, they must request an extension from the Biophysics Office.

Language Requirements

No language requirements.

Breadth Requirement

No doctoral minor or Graduate/Professional certificate required.

Other Grade Requirements

Credits are not counted from courses in which a grade of BC or below is obtained for the Biophysics core courses. In the event of an unsatisfactory grade, the student must repeat the course and obtain a grade of B or better if they want to count the class towards their Biophysics GPA and course requirements.

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- BIOCHEM/GENETICS/MD GENET 620 Eukaryotic Molecular Biology

Neuroscience

- NTP/NEURODPT 610 Cellular and Molecular Neuroscience

Spectroscopy/Microscopy
Microscopy of Life

Biomedical Optics and Biophotonics

Selected Topics in Physical Chemistry (Topic: Spectroscopy of Individual Molecules and Particles)

Advanced Topics (Topic: Advanced Topics in NMR)

Bioinformatics for Biologists

Advanced Bioinformatics

Students are required to participate in seminar courses for the duration of their studies. Initially, all students are required to enroll in CHEM/BIOCHEM 872 (Topic: Macromolecular and Biophysical Chemistry) for both fall and spring semesters. Once a student has successfully achieved dissertator status, they are eligible to enroll in alternative seminars with permission from the program.

To fulfill the remainder of required credits, students can take specialty courses. It is recommended to take courses in areas such as biotechnology, computer science, electrical and computer engineering, molecular biology, or physics. Students should consult with their Thesis Advisor and thesis committee members about appropriate specialty courses to take pertaining to individual training goals.

Finally, all students are expected to register for 990 research credits every semester. These are the courses in which students will be conducting their independent research. First semester students will register for 990 research credits in the department of the Biophysics Program Chair. Once a thesis lab is chosen, these credits will be conducted in the thesis advisor’s home department.

Because CHEM 668 Biophysical Spectroscopy is only offered every other year, students will be advised upon joining the program in which semester they must complete the course. This course must be taken for 3 credits.

To meet the 6 credit minimum, all elective courses must be at least 2 credits. That means that students can, for example, take two 3-credit courses, three 2-credit courses, or one 2-credit and one 4-credit course to satisfy this requirement. The above list of courses have all been approved as elective courses by the Biophysics Steering Committee. If you are interested in a different course, in order for it to count as an elective course towards your Biophysics graduate degree, the course needs to be approved by the Steering Committee. Please email the coordinator at biophysics@bocklabs.wisc.edu a syllabus from the course and a short paragraph detailing why the class is relevant to your research.

Students are also required to take an ethics course that covers all of the items considered necessary by the NIH for ethical and professional scientific training. It is strongly recommended that students take the ethics course during their first year. The recommended ethics course is: BIOCHEM 729 Advanced Topics. The Biophysics Program also conducts a mandatory ethics refresher seminar for all students that is held at the end of every spring semester.