

# BIOPHYSICS, PHD

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (<https://guide.wisc.edu/graduate/#requirements>) and policies (<https://guide.wisc.edu/graduate/#policies>), in addition to the program requirements listed below.

### MAJOR REQUIREMENTS

#### MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

#### 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

#### Requirement Detail

Minimum 51 credits

Credit

Requirement

Minimum 32 credits

Residence

Credit

Requirement

Minimum 26 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework Requirement (50%) Requirement policy: <https://policy.wisc.edu/library/UW-1244> (<https://policy.wisc.edu/library/UW-1244/>).

Overall 3.00 GPA required.

Graduate GPA Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: <https://policy.wisc.edu/library/UW-1203> (<https://policy.wisc.edu/library/UW-1203/>).

Other Grade Requirements Degree requirements are not satisfied 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 degree course requirements.

**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.

**Graduate School Breadth Requirement** No doctoral minor or graduate/professional certificate required.

### REQUIRED COURSES

Code	Title	Credits
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#### Required by the time oral prelim is taken

CHEM 665	Biophysical Chemistry	3
CHEM 668	Biophysical Spectroscopy	3

#### Biophysics Advanced Electives

Students must take at least 6 credits of advanced electives from at least two different categories using the following list of classes (alternative classes may be substituted with approval from the Biophysics Program Curriculum 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	
MICROBIO/ BMOLCHEM 668	Microbiology at Atomic Resolution	
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	
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*Spectroscopy/Microscopy*

B M E/ MED PHYS/ PHMCO- L- M/PHYSICS/ RADIOL 619	Microscopy of Life
B M E 751	Biomedical Optics and Biophotonics
CHEM 636	Topics in Chemical Instrumentation: Introduction to NMR
CHEM 860	Selected Topics in Physical Chemistry (Topic: Spectroscopy of Individual Molecules and Particles)
BIOCHEM 729	Advanced Topics (Topic: Advanced Topics in NMR)

*Bioinformatics and Computational Biology*

B M I/ COMP SCI 776	Advanced Bioinformatics
ONCOLOGY 778	Bioinformatics for Biologists

**Ethics Course**

BIOCHEM 729	Advanced Topics (Resp Conduct of Research)	1-3
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**Seminar Courses** **5-9**

1st and 2nd year students are required to take CHEM/BIOCHEM 872 (Topic: Macromolecular and Biophysical Chemistry) each semester during the first two years in the program. 3rd year students are required to take CHEM/BIOCHEM 872 for one semester (either Fall or Spring) and a different seminar course in the other semester. 4th year and beyond are required to attend four (4) more seminar classes before graduation. These are typically 900-level one-credit courses based on the presentation and discussion of journal articles or individual research.

CHEM/ BIOCHEM 872	Selected Topics in Macromolecular and Biophysical Chemistry
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**Additional Coursework** **33-36***Specialty Courses*

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.

*Research Credits*

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 Director. Once a thesis lab is chosen, these credits will be conducted in the thesis advisor's home department.

**Total Credits** **51**

elective course options by the Biophysics Steering Committee. If you are interested in a different course to count as an elective course towards your Biophysics graduate degree, the course needs to be approved by the Curriculum Committee. To request a course approval, please use this form (<https://biophysics.wisc.edu/advanced-elective-approval-form/>) (you will need a syllabus from the course and a short paragraph detailing why the class is relevant to your research).

**Ethics Requirement**

Students are 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 (Responsible Conduct of Research). The Biophysics Program also conducts a mandatory ethics refresher seminar for all students that is held at the end of every spring semester.

**Advanced Electives Requirement**

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 were approved as