

Biophysics Ph.D. Program

The biophysics graduate program prepares students to pursue independent research at the interface of biology, chemistry, and physics. The main focus of the Ph.D. program is to offer research training in the applications of physics-based techniques to biological systems ranging in complexity from single molecules to whole cells and tissues. Students typically enter the program with a strong background in at least one of Physics, Chemistry, or Biology. Students may choose Ph.D. mentors from among a group of over 40 faculty drawn from departments across campus, all pursuing research in Biophysics.

Course requirements

All students are expected to complete two core biophysics courses

Biophysics 520 - *Energetics, Interactions, and Dynamics of Biomacromolecules*

Biophysics 521 - *Physical Methods for the Study of Biomacromolecules*

Most students, unless they have an unusually strong background in biology, will be expected to complete two courses in cell biology and biochemistry:

Cell Biology (Biology 428 or Anatomy & Cell Biology 530)

Protein Structure and Function (Biological Chemistry 550)

Because of the interdisciplinary nature of Biophysics, students enter the program from a variety of undergraduate backgrounds. Students that lack a strong foundation in the physical sciences should take appropriate advanced undergraduate courses or introductory graduate courses in quantum mechanics or quantum chemistry and in thermodynamics or statistical physics. Students who have not taken a biochemistry course should take Biochemistry 515.

Teaching requirements

Although there are no formal teaching requirements, students are strongly encouraged to teach at least one semester as part of their training. Occasionally students are supported as GSIs for a portion of their studies.

Preliminary exam format

To achieve candidacy students must complete a 3-part preliminary exam:

Physics – written exam based on questions drawn from undergraduate physics curriculum

Biochemistry – written exam based on questions drawn from graduate biochemistry and cell biology courses.

Biophysics – original research proposal. Students must write an original research proposal (ca. 10 pages) to address a question of current relevance in biophysics. The proposal is examined by a 3-member faculty panel.

Seminar requirements

One in the 3rd year

One in the final year before thesis submission

Time-to-degree

The time to degree varies from 4 to 6 years, with a goal of 5 years.

Careers for Biophysics Ph.D.s

Recent graduates are pursuing careers in industry (ranging from large pharmaceutical companies to small start-up companies), national laboratories, and academics.