

BIOPHYSICS (PHD)

Graduate School

Program Website (<https://biophysics.cornell.edu/>)

CIP: 26.0203 | HEGIS: 0415.00 | NYSED: 20209

Graduate Field

Biophysics (<https://catalog.cornell.edu/graduate-school/biophysics/>)

Program Description

Graduate study in biophysics is interdisciplinary and highly individualized. Students majoring in biophysics are expected to obtain a broad, interdisciplinary knowledge of fundamental principles in both the biological and physical sciences. But because biophysics covers a wide range of areas, it would be unrealistic to expect to master each facet in detail. A student working in the dynamics and motions of DNA will develop a strong background in statistical physics, computational science, and instrumentation, while a student involved in enzyme dynamics studies will develop a strong background in biochemistry, X-ray scattering and crystallography, and cryo-electron microscopy.

At the point of passing the "A" exam – usually after two years of study – each student is expected to demonstrate competence in specific subject areas that serve as a foundation for further work. Areas of required competence are: advanced mathematics, physics (i.e., statistical mechanics and quantum mechanics), biology (i.e., biochemistry and molecular cell biology), and advanced studies in molecular biophysics and associated areas of biological and physical sciences (i.e., structural biology, computer literacy, laboratory electronics, and instrumentation).

Biophysics field members are drawn from fourteen departments in seven campus units. In addition to a rich array of instrumentation in the field members labs, shared research facilities available at Cornell to Biophysics students include: MacCHESS (Macromolecular Crystallography at the Center for High Energy Synchrotron Studies); the Biotechnology Resource Center (BRC), which has core facilities in advanced optical imaging and biomolecular analysis, genomics and epigenomics, proteomics and bioinformatics; the Cornell Nanofabrication Facility (CNF); the Cornell NMR and Chemistry Mass Spectrometry Facility; and the Cornell Center for Materials Research (cryo-EM and Surface Analysis and Characterization).

Concentrations

- Biophysics

Program Information

- Instruction Mode: In Person
- Location: Ithaca, NY
- Minimum Credits for Degree: 150

Program Requirements

- Minimum Semesters for Degree: 10

Graduate School Milestones

- Responsible Conduct of Research Training: Required
- Open Researcher and Contributor ID (ORCID): Required

- Student Progress Reviews (SPR) begin: Second Year
- Examination for admission to candidacy (A Exam): Spring of third year
- Defense of Dissertation (B Exam): By the seventh year

Course Requirements

Additional course requirements may be set by the student's Special Committee. Program specific requirements that apply to all students are included below.

Year 1 (Fall)

- BIOMG 8369 Foundational Skills for Graduate School and Beyond

Year 2 (Fall)

- BIOMG 7940 Current Topics in Biochemistry, Molecular and Cell Biology

Year 2 (Spring)

- BIOMG 7510 Ethical Issues and Professional Responsibilities

University Graduation Requirements Requirements for All Students

In order to receive a Cornell degree, a student must satisfy academic and non-academic requirements.

Academic Requirements

A student's college determines degree requirements such as residency, number of credits, distribution of credits, and grade averages. It is the student's responsibility to be aware of the specific major, degree, distribution, college, and graduation requirements for completing their chosen program of study. See the individual requirements listed by each college or school or contact the college registrar's office (<https://registrar.cornell.edu/service-resources/college-registrar-directory/>) for more information.

Non-academic Requirements

Conduct Matters. Students must satisfy any outstanding sanctions, penalties or remedies imposed or agreed to under the Student Code of Conduct (Code) or Policy 6.4. Where a formal complaint under the Code or Policy 6.4 is pending, the University will withhold awarding a degree otherwise earned until the adjudication process set forth in those procedures is complete, including the satisfaction of any sanctions, penalties or remedies imposed.

Financial Obligations. Outstanding financial obligations will not impact the awarding of a degree otherwise earned or a student's ability to access their official transcript. However, the University may withhold issuing a diploma until any outstanding financial obligations owing to the University are satisfied.

Learning Outcomes

At the point of passing the A exam – usually after two years of study – each student is expected to demonstrate competence in specific subject areas that will serve as a foundation for further work.

Areas of competence include:

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- Advanced Mathematics
- Physical chemistry (i.e., statistical mechanics and/or quantum mechanics)
- Biochemistry and molecular cell biology
- Computer literacy and/or laboratory electronics and instrumentation
- Advanced studies in molecular biophysics and associated areas of biological and physical sciences