

# BIOPHYSICS (BIPH)

Graduate Degree Program  
College: Computer, Mathematical, and Natural Sciences

## Abstract

The Biophysics Program ([biophysics.umd.edu](http://biophysics.umd.edu)) in the Institute for Physical Science and Technology (IPST) offers Ph.D. degrees in Biophysics. It is affiliated with the College of Computer, Mathematical, & Natural Sciences and the College of Engineering.

The Maryland Biophysics Program aims to train graduate students in the use of theoretical, computational, and experimental methods to gain quantitative insights into biological systems. The post genomic era is bringing tools for unprecedented characterization and control of living systems. To fully harness these tools for quantitative insights in biology, biomedicine, and bioengineering requires expertise from a number of disciplines. Thus, our program includes faculty from Chemistry, Physics, Biology, Mathematics, Materials Science, Bioengineering and Chemical & Biomolecular Engineering.

The Biophysics Program is open to students with undergraduate degrees in Chemistry, Physics, Biology, Mathematics, Computational Science, or Engineering. Because student backgrounds are diverse, we tailor the curriculum to suit the needs of the individual.

Research areas include:

- Cell Mechanics and Motility
- Cellular Dynamics in Immune Signaling, Gene Expression, and Cancer
- Computational Biology and Complex Networks
- Data Analytics in Population Biology
- Experimental and Computational Neuroscience
- Infectious Diseases: Ecology, Evolution, Cellular/Molecular Scale, Mathematical Modeling
- Machine Learning in Biology
- Mechanobiology
- Membrane Biophysics
- Molecular Simulations
- Nanobiology, Biomaterials, and Drug Design
- Protein and RNA Structure and Folding
- Statistical Thermodynamics

The core courses that include (but are not limited to) Statistical Mechanics, Chemical Thermodynamics, Biophysical Chemistry, Membrane Biophysics and Cell Biology constitute the basis for further specialization.

## Financial Assistance

We provide financial aid in the form of Teaching Assistantships (TAs) and Dean's Fellowships to all entering graduate students. Assistantships also include tuition assistance and health insurance benefits. Outstanding students are automatically considered for University-wide fellowships. In addition, individual faculty may offer Research Assistantships (RAs) to exceptionally qualified students. It is expected that all students will be RAs after they choose their advisors. Some of our students work with their research advisor to arrange support from the National Institutes of Health (NIH).

## Contact

Reach our Biophysics Graduate Program team at [biophysics@umd.edu](mailto:biophysics@umd.edu).

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**Courses:** BCHM (<https://academiccatalog.umd.edu/graduate/courses/bchm/>) BIOE (<https://academiccatalog.umd.edu/graduate/courses/bioe/>) BIOL (<https://academiccatalog.umd.edu/graduate/courses/biol/>) BIPH (<https://academiccatalog.umd.edu/graduate/courses/biph/>) BSCI (<https://academiccatalog.umd.edu/graduate/courses/bsci/>) CHEM (<https://academiccatalog.umd.edu/graduate/courses/chem/>) ENMA (<https://academiccatalog.umd.edu/graduate/courses/enma/>) PHYS (<https://academiccatalog.umd.edu/graduate/courses/phys/>)

**Relationships:** Chemical Physics (CHPH) (<https://academiccatalog.umd.edu/graduate/programs/chemical-physics-chph/>), Chemistry (CHEM) (<https://academiccatalog.umd.edu/graduate/programs/chemistry-chem/>), Materials Science and Engineering (ENMA) (<https://academiccatalog.umd.edu/graduate/programs/materials-science-engineering-enma/>), Physics (PHYS) (<https://academiccatalog.umd.edu/graduate/programs/physics-phys/>), Fischell Department of Bioengineering (BIOE) (<https://bioe.umd.edu/>), Chemical Engineering (ENCH) (<https://academiccatalog.umd.edu/graduate/programs/chemical-engineering-ench/>)

## ADMISSIONS

### GENERAL REQUIREMENTS

- **Statement of Purpose:** *In addition to the prompt provided by the Graduate School, applicants to the Biophysics Program should include responses to these questions (<https://ipst.umd.edu/graduate-programs/biophysics/prospective-students/admissions/personal-statement/>) in their Statement of Purpose.*
- Transcript(s)

- TOEFL/IELTS/PTE (international graduate students (<https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/>))

## PROGRAM-SPECIFIC REQUIREMENTS

Required:

- Letters of Recommendation (3)
- CV/Resume
- Description of Research/Work Experience

Optional:

- Graduate Record Examination (GRE) (optional)
- GRE Subject (optional)
- Writing Sample (optional)

## APPLICATION DEADLINES

Type of Applicant	Fall Deadline
<b>Domestic Applicants</b>	
US Citizens and Permanent Residents	January 9, 2029
<b>International Applicants</b>	
F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	January 9, 2029

### RESOURCES AND LINKS:

**Other Deadlines:** [biophysics.umd.edu](http://www.biophysics.umd.edu) (<http://www.biophysics.umd.edu>)

**Program Website:** [biophysics.umd.edu/admissions/](http://www.biophysics.umd.edu/admissions/) (<http://www.biophysics.umd.edu/admissions/>)

**Application Process:** [gradschool.umd.edu/admissions/application-process/step-step-guide-applying](https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying) (<https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying>)

## REQUIREMENTS

- Biophysics, Doctor of Philosophy (Ph.D.) (<https://academiccatalog.umd.edu/graduate/programs/biophysics-biph/biophysics-phd/>)
- Biophysics, Master of Science (M.S.) (<https://academiccatalog.umd.edu/graduate/programs/biophysics-biph/biophysics-ms/>)

## FACILITIES AND SPECIAL RESOURCES

### Facilities & RESEARCH

Incoming students are provided with desk space with up-to-date computer facilities in an office space designated specifically for first-year Biophysics graduate students.

Biophysics Ph.D. students work with research faculty from across the University of Maryland, in state-of-the-art research labs. The Division of Research's Core Facilities page (<https://research.umd.edu/capabilities/core-facilities/>) offers a list of other instrumentation and facilities available for faculty and graduate student researchers at UMD. A few examples relevant to Biophysics Ph.D. students include the Biomolecular NMR Facility (<https://chem.umd.edu/research/core-facilities/biomolecular-nmr/>), the Mass Spectrometry Facility (<https://chem.umd.edu/research/core-facilities/mass-spectrometry/>), and the

Imaging Core (<https://biosciencecores.umd.edu/imaging-core.html>).

Our proximity to Washington, DC offers unparalleled access to world-class research facilities and institutions. This unique location allows Biophysics Ph.D. students to engage in interdisciplinary research, collaborate with top scientists, and access career-building opportunities in numerous sectors. Some of the nearby facilities and agencies include the National Institutes of Health (<https://www.nih.gov/>) (NIH), National Institute of Standards and Technology (<https://www.nist.gov/>) (NIST), Army Research Laboratory (<https://arl.devcom.army.mil/>) (ARL), Food and Drug Administration (<https://www.fda.gov/>) (FDA), and Children's National Medical Center (<https://research.childrensnational.org/>).

## The First-Year Experience

### ADVISING & MENTORING

Students are assigned a 2-member faculty advisory committee at the time they enroll in the Biophysics program. This committee is the key group that advises the Biophysics student and evaluates their process, especially in the first two years of study. Students meet with their advisory committee at least once per semester.

Biophysics students are also paired with a student mentor, matched based on general research interest. Student mentors are available to share their wisdom to help the first-year student navigate a new academic environment.

### RESEARCH ROTATIONS

During their first year in the program, Biophysics graduate students complete three research rotations to gain exposure to various research topics, lab tools, and methodologies while also honing their laboratory skills and identifying a research advisor.

## Biophysics Seminar SERIES & SYMPOSIA

A Biophysics Seminar (<https://ipst.umd.edu/graduate-programs/biophysics/events/seminars/>) is held (on average) once a week during the Fall and Spring semesters, generally given by visiting scholars.

Symposia (<https://ipst.umd.edu/graduate-programs/biophysics/events/symposia/>) consisting of about six nationally- and internationally-known scholars are conducted once a year on various topics. Symposia are well attended by students, postdocs, faculty, and visitors from local institutions such as NIH and Johns Hopkins.