BIOENGINEERING (BIOE)

Graduate Degree Program
College: Engineering

Abstract

The Fischell Department of Bioengineering provides advanced, research-intensive training at the intersection of engineering, biology, medicine, and health. Through a combination of rigorous coursework, structured milestones, and close faculty mentorship, the program equips students with the knowledge and skills needed to conduct independent, impactful research in the areas listed below. Students progress through foundational and elective coursework, laboratory rotations, qualifying and proposal examinations, and dissertation research, supported by a collaborative environment that includes opportunities for interdisciplinary work and combined degree options (e.g., M.D./Ph.D.) with the University of Maryland School of Medicine.

Our program provides a basic understanding of bioengineering at the molecular and cellular level, focusing on:

- Biocomputation
- Biomolecular engineering
- Biomaterials
- Biomechanics & mechanobiology
- Drug delivery
- Medical devices
- Optical technologies & imaging
- Tissue engineering & regenerative medicine

With strong, funded research programs and innovative partnerships with the National Institutes of Health, Food and Drug Administration, and University of Maryland School of Medicine, the Fischell Department of Bioengineering is an exciting place for graduate study. The department also has a clinical research home in the Edward & Jennifer St. John Center for Translational Engineering and Medicine (CTEM) in Baltimore. CTEM fosters face-to-face collaboration among clinicians and engineers as they develop next-generation medical solutions.

Financial Assistance

All Ph.D. students are supported at a minimum stipend level. No separate financial support application is required. Students will automatically be considered for eligible forms of support.

Contact

Please see the program's website for program description, admission requirements, and financial aid information.

Bioengineering Academic and Student Affairs
3102 A. James Clark Hall
8278 Paint Branch Drive
University of Maryland
College Park, MD 20742
Telephone: 301.405.8268
Fax: 301.405.9953
Email: bioe-grad@umd.edu

Website: http://www.bioe.umd.edu

Courses: BIOE (https://academiccatalog.umd.edu/graduate/courses/bioe/)

ADMISSIONS

GENERAL REQUIREMENTS

- Statement of Purpose
- Transcript(s)
- TOEFL/IELTS/PTE (international graduate students (https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/))

PROGRAM-SPECIFIC REQUIREMENTS

- Letters of Recommendation (3)
- Graduate Record Examination (GRE) (optional)
- CV/Resume
- Personal History Statement (https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/admissionsforms/umdpersonalhistorystatementbioe.pdf) (optional): Personal History Statement to be uploaded via the Supplementary Application document upload area within the "Program Upload Requirements" section of the application.

Admission to the graduate program in Bioengineering requires a bachelor's degree in a science or engineering discipline from an accredited undergraduate institution. Applicants must take the following prerequisite courses: Calculus I, II, III; and Differential Equations. These courses must be complete prior to enrolling in the graduate program.

Ph.D. applicants should apply by **December 15** for priority consideration for financial support. For more admissions information or to apply to the program, please visit our Graduate School website (https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying/).

APPLICATION DEADLINES

Type of Applicant	Fall Deadline
Domestic Applicants	
US Citizens and Permanent Residents	M.S.: January 15, 2027
	Ph.D.: January 5, 2027
International Applicants	
F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	M.S.: January 15, 2027
	Ph.D.: January 5, 2027

RESOURCES AND LINKS:

Other Deadlines: bioe.umd.edu (http://www.bioe.umd.edu)
Program Website: bioe.umd.edu/graduate (http://www.bioe.umd.edu/graduate/)
Application Process: gradschool.umd.edu/admissions/application-process/step-step-guide-applying (https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying/)

REQUIREMENTS

- Bioengineering, Doctor of Medicine and Doctor of Philosophy (dual degree) (M.D. and Ph.D.) (https://academiccatalog.umd.edu/

graduate/programs/bioengineering-bioe/bioengineering-dual-degree-md-phd/)

- Bioengineering, Doctor of Medicine and Master of Science (dual degree) (M.D. and M.S.) (https://academiccatalog.umd.edu/graduate/programs/bioengineering-bioe/bioengineering-dual-degree-md-ms/)
- Bioengineering, Doctor of Philosophy (Ph.D.) (https://academiccatalog.umd.edu/graduate/programs/bioengineering-bioe/bioengineering-phd/)
- Bioengineering, Master of Science (M.S.) (https://academiccatalog.umd.edu/graduate/programs/bioengineering-bioe/bioengineering-ms/)

FACILITIES AND SPECIAL RESOURCES

The Department is located in A. James Clark Hall, a 184,000 square foot building serving as a central hub for new partnerships and collaboration for organizations throughout the Maryland and Washington, D.C. region.

Approximately 7,332 sq. feet of classroom space and 11,402 sq. feet of class lab space is used to support instructional capabilities. To help create an organic flow of ideas between many disciplines, the building features flex classrooms and two stories of flexible laboratories to the campus – including wet and dry spaces as well as a vivarium.

Optical laser and imaging laboratories feature state-of-the-art technology in digital fabrication, rapid prototyping, 3D printing, optics, and bioinformatics. In the imaging suite, researchers have the ability to examine molecular resolution of pathogens – whether in the GI tract or bloodstream – that show how a nano-carrier delivers a drug to a specific tumor site. Additionally, laser devices and magnetic resonance imagers will allow a close examination of cross-sections of the body and brain.