BIOENGINEERING (BIOE)

Graduate Degree Program
College: Engineering

Abstract
Welcome to the Graduate Program in the Fischell Department of Bioengineering at the A. James Clark School of Engineering, University of Maryland. Our program represents the strong intellectual interdisciplinary infrastructure and collaborative culture that links engineering, biology, and medicine at our university.

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

- Medical Devices
- Biocomputational Systems
- Optical Technologies
- Imaging
- Drug Delivery
- Therapeutics Design
- Biomolecular Engineering
- Cell and Tissue Engineering
- Biomaterials
- BioChips

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.

Financial Assistance
Graduate assistantships and fellowships are available on a competitive basis to Ph.D. students. 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.

Graduate Program
The Fischell Department of Bioengineering
3102A 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

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)
- CV/Resume
- Publications/Presentations

Admission to the Graduate Program in Bioengineering requires a Bachelor’s degree in a science or engineering discipline from an accredited undergraduate institution. Applicants with degrees in non-engineering disciplines, such as biology, chemistry, physics, or mathematics, are expected to have the following prerequisite courses: Calculus I, II, III; Differential Equations; and Thermodynamics. These courses would ideally have been completed by the time of application, but they may also be in progress.

For more admissions information or to apply to the program, please visit our Graduate School website: www.gradschool.umd.edu/admissions

Application Deadlines

<table>
<thead>
<tr>
<th>Type of Applicant</th>
<th>Fall Deadline</th>
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<tbody>
<tr>
<td>Domestic Applicants</td>
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<tr>
<td>US Citizens and Permanent Residents</td>
<td>8 Jan</td>
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<tr>
<td>International Applicants</td>
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<td>F (student) or J (exchange visitor)</td>
<td>8 Jan</td>
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<tr>
<td>visas; A,E,G,H,I and L visas and</td>
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<td>immigrants</td>
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Other Deadlines: Please visit the program website at http://www.bioe.umd.edu

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. ft. of classroom space and 11,402 sq. ft. 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.

Faculty

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First/Middle Name</th>
<th>Graduate Faculty Status</th>
<th>Academic Credentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aranda-Espinoza</td>
<td>Jose Helim</td>
<td>Full Member</td>
<td>B.S., University of Zacatecas, Mexico 1990; M.S., University of San Luis Potosi, Mexico 1993; Ph.D., University of California-Berkeley, 1997.</td>
</tr>
<tr>
<td>Chen</td>
<td>Yu</td>
<td>Full Member</td>
<td>B.S., Peking University, 1997; M.S., University of Pennsylvania, 2001; Ph.D., 2003</td>
</tr>
<tr>
<td>Culver</td>
<td>James N.</td>
<td>Full Member</td>
<td>B.S., Oklahoma State University-Stillwater, 1985; M.S., Oklahoma State University, 1987; Ph.D., University of California-Riverside, 1991.</td>
</tr>
<tr>
<td>DeVoe</td>
<td>Donald Lad</td>
<td>Full Member</td>
<td>B.S., University of Maryland-College Park, 1991; M.S., 1993; Ph.D., University of California-Berkeley, 1997.</td>
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- Associate Professor, Plant Science
- Associate Professor, Bioengineering
- Full Member, Applied Mathematics & Statistics
- Professor, Biological Sciences
- Full Member, Applied Mathematics & Statistics
- Full Member, Applied Mathematics & Statistics
- Associate Professor, Bioengineering
- Associate Professor, Bioengineering
- Associate Professor, Bioengineering
- Associate Professor, Bioengineering
Duncan Gregg Full Member B.S., Florida State University, 2009; Ph.D., Johns Hopkins University, 2014 Assistant Professor, Bioengineering Ghodssi Reza Full Member B.S., University of Wisconsin-Madison, 1990; M.S., 1992; Ph.D., 1996. Professor, Electrical and Computer Engineering Professor, Systems Engineering Affiliate Professor, Materials Science and Engineering Affiliate Professor, Bioengineering

Dwyer Daniel Adjunct Member Assistant Professor, Biological Sciences Affiliate Assistant Professor, Bioengineering He Xiaoming Adjunct Member B.S., Xian Jiaotong University, 1995; M.S., Xian Jiaotong University, 1998; Ph.D., University of Minnesota, 2004 Professor, Bioengineering

Eisenstein Edward Full Member B.S., St. Joseph's University, 1979; Ph.D., Georgetown University, 1985. Associate Professor, Bioengineering Chair, Bioengineering Professor, Bioengineering Affiliate Professor, Chemical Engineering Herold Keith E. Full Member B.S., University of Akron, 1977; M.S., Ohio State University-Columbus, 1979; Ph.D., 1985. Associate Professor, Bioengineering

Fisher John P. Full Member B.S., The Johns Hopkins University, 1995; M.S., University of Cincinnati, 1998; Ph.D., Rice University, 2002 Chair, Bioengineering Professor, Bioengineering Affiliate Professor, Chemical Engineering Assistant Professor, Aerospace Engineering Affiliate Professor, Materials Science and Engineering Affiliate Professor, Bioengineering Graduate Director, Aerospace Engineering Jay Steven M. Full Member B.S., University of Georgia, 2004; Ph.D., Yale University, 2009. Assistant Professor, Bioengineering Affiliate Assistant Professor, Biological Sciences

Flatau Alison Full Member B.S., University of Connecticut, 1978; M.S., University of Utah, 1985; Ph.D., 1990 Professor, Aerospace Engineering Affiliate Professor, Materials Science and Engineering Affiliate Professor, Bioengineering Graduate Director, Aerospace Engineering Assistant Professor, Aerospace Engineering Huang Chiao Full Member B.S., National Taiwan University of Technology, 2005; Ph.D., Arizona State University, 2012 Assistant Professor, Bioengineering

Jewell Christopher M. Full Member B.S., Lehigh University, 2003; M.S., University of Wisconsin-Madison, 2005; Ph.D., 2008. Assistant Professor, Bioengineering Affiliate Assistant Professor, Biological Sciences
Johnson Arthur T. Full Member
B.S.A.E., Cornell University, 1964; M.S., 1967; Ph.D., 1969.
Professor Emeritus, Bioengineering

Kahn Jason D. Full Member
B.A., Harvard University, 1983; Ph.D., University of California, Berkeley, 1990.
Associate Professor, Biochemistry
Associate Professor, Biological Sciences
Associate Professor, Chemistry
Affiliate Associate Professor, Bioengineering

Kanold Patrick Full Member
Ph.D., Johns Hopkins University, 1999.
Professor, Neurosciences and Cognitive Science
Professor, Biological Sciences
Professor, Biophysics
Affiliate Associate Professor, Bioengineering

Karlsson Amy Full Member
B.S Iowa State University, Ames, IA 2003 Ph.D., University of Wisconsin Madison, WI 2009
Assistant Professor, Chemical Engineering
Affiliate Assistant Professor, Bioengineering

Kjellerup Birthe Full Member
M. Sc. Environmental Professor, Engineering, Aalborg University, 1997; Ph.D., Environmental Professor, Microbiology, Aalborg University, 2004
Assistant Professor, Bioengineering

Kofinas Peter Full Member
B.S., Massachusetts Institute of Technology, 1989; M.S., 1989; Ph.D., 1994.
Professor, Bioengineering
Professor, Chemical Physics
Affiliate Professor, Materials Science and Engineering
Affiliate Professor, Chemical Engineering

Matysiak Silvina Full Member
Ph.D., Rice University, 2007

Montas Hubert J. Full Member
B.S., McGill University-Montreal, 1988; M.S., 1990; Ph.D., Purdue University, 1996.

Muro Silvia Full Member
B.S., Universidad de Granada, 1995; Ph.D., Universidad Autonoma de Madrid, 1999
Associate Professor, Bioengineering

Scarcelli Giuliano Full Member
B., University of Bari, 2001; M.S., University of Maryland - Baltimore County, 2003; Ph.D., University of Maryland - Baltimore County, 2006
Assistant Professor, Bioengineering

Sochol Ryan Adjunct Member
B.S., Denison University, 2006; Ph.D., University of Maryland - College Park, 2011
Affiliate Assistant Professor, Bioengineering

Stroka Kimberly Full Member
B.S., Denison University, 2006; Ph.D., University of Maryland - College Park, 2011
Assistant Professor, Bioengineering
<table>
<thead>
<tr>
<th>Name</th>
<th>Last Name</th>
<th>Membership</th>
<th>Education</th>
<th>Positions</th>
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<tbody>
<tr>
<td>Tao</td>
<td>Yang</td>
<td>Full Member</td>
<td>B.S., Nanjing Institute of Technology, 1982; M.S., University of Nebraska-Lincoln, 1988; Ph.D., Pennsylvania State University, University Park, 1991.</td>
<td>Professor, Bioengineering</td>
</tr>
<tr>
<td>White</td>
<td>Ian</td>
<td>Full Member</td>
<td>Ph.D., Stanford University, 2002</td>
<td>Associate Chair, Bioengineering Associate Professor, Bioengineering Assistant Professor, Chemical Physics</td>
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