Biocomputational Engineering B.S.

The Biocomputational Engineering Program offered through the University of Maryland A. James Clark School of Engineering is designed to train students in the fundamentals of engineering and life sciences with strong skills in computational methods and data science. Through combining the growing fields of bioengineering, life sciences, and data science, the Biocomputational Engineering Program is poised to have a significant impact on society.

The objective of the **Biocomputational Engineering Program** is to provide a breadth of fundamentals in the field of bioengineering, a discipline grounded in physics, chemistry, and biology, with quantitative problem solving. Students will develop skills in computation and data science that can be applied to the modeling of complex biological systems and the analysis of complex biological data sets in order to create new knowledge from the molecular to organ to system levels, and to develop innovative processes for the prevention, diagnosis, and treatment of disease.

FUNDAMENTALS INCLUDED IN THE INSTRUCTION

Mathematics and Statistics for Engineers
Molecular Biology
Computational Systems Biology
Synthetic Biology
Fluid Dynamics, Mass Transfer

SKILLS TAUGHT BY THE PROGRAM

Computer Programming (Python, C++, R)
Machine Learning
Data Visualization
Computer Modeling
Molecular Lab Techniques

The curriculum will offer junior- and senior-level courses within the state-of-the-art Biomedical Sciences and Engineering (BSE) education facility at the Universities at Shady Grove. Graduates of the program will be well-positioned for rewarding career opportunities in the emerging biopharma, biotech, and biomedical industry centered in Maryland and throughout the mid-Atlantic region.

For more information, contact:

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UNIVERSITY OF MARYLAND

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ADMISSIONS INFORMATION

Students are welcome to apply as transfer students from community college or four-year institutions. For best consideration, prospective students should meet the following requirements:

- Successful completion (C- or better) of all prerequisite courses listed in the table below
- Complete **60** transferrable credits (or an Associate's Degree)
- Achieve a cumulative grade point average (GPA) of **2.5**

University of Maryland Course*	Credits	Montgomery College	Howard Community College	Frederick Community College	Prince George's Community College
Academic Writing 9 (ENGL101)	3	ENGL102	ENGL121	ENGL101	EGL1010
Introduction to Engineering Design (ENES100)	3	ENES100	ENES100	ENGR100	EGR1010
Calculus I (MATH140)	4	MATH181	MATH181	MATH185	MAT2410
Calculus II (MATH141)	4	MATH182	MATH182	MATH195	MAT2420
Calculus III (MATH 241)	4	MATH280	MATH240	MATH285	MAT2430
Differential Equations for Scientists and Engineering (MATH 246)	3	MATH282	MATH260	MATH275	MAT2460
General Physics: Mechanics and Particle Dynamics (PHYS161)	3	PHYS161	PHYS110	PHYS151	PHY1030
General Physics: Vibration, Waves, Heat, Electricity and Magnetism/Lab (PHYS260/261)	4	PHYS262	PHYS111	PHYS252	PHY2030
General Chemistry for Engineers/Lab or General Chemistry and Energetics (CHEM135/136 or CHEM271/272)	4	CHEM132	CHEM135 or CHEM102	CHEM102	CHM2000 or CHM1020
Principles of Molecular & Cellular Biology or Biology for Engineers (BSCI170 or BIOE120)	3	BIOL150 or ENES120	BIOL141 or BIOL120	BSCI150	BIO1140
Matlab programming course (BIOE241 or equivalent)	3	ENES240 or equivalent	ENES271	MATH220 and CMIS105	EGR1140
UMD General Education requirements or Associate's Degree	22	Completion of Associate's Degree Requirements. See community college suggested transfer pathway or contact your community college advisor.			
TOTAL TRANSFER CREDITS	**60**				

*For more information regarding course equivalencies, please visit: **transfercredit.umd.edu**

Scheduling a Pre-Transfer Advising Appointment is strongly encouraged to review admissions criteria and develop an individualized transfer pathway:

meetings.hubspot.com/ebailey7