

# MECHANICAL ENGINEERING



## UMBC'S B.S. IN MECHANICAL ENGINEERING

**UMBC's B.S. in Mechanical Engineering**, an ABET-accredited program, is committed to excellence in research and education. It also offers distinct undergraduate experiences in design realization through:

- The Society of Automotive Engineers Mini Baja build and competition
- Competitions sponsored by the American Society of Mechanical Engineers
- Industry-sponsored, real-world capstone design projects
- Special research opportunities offered to undergraduate students each year

Students can augment their coursework and gain practical engineering experience through applied internships or co-ops. Higher-level courses cover fundamental principles in the areas of solid mechanics, thermal-fluids, and design and manufacturing systems. Laboratory and elective courses provide students the opportunity to test these principles and apply them individually and as teams in projects that involve industry design challenges in areas like material processing, energy conversion, and aerospace.

*"My undergraduate professors at UMBC not only prepared me with the knowledge but also the confidence necessary to be successful in engineering. I find myself continuously using the fundamentals of classes such as materials, circuits, and machine design."*

**- Shelbi Tippett '18, mechanical engineering  
Operations Manager for Stanley Black & Decker**

## REQUIRED TRANSFER COURSEWORK

Admission to the mechanical engineering program at UMBC-Shady Grove is contingent upon successful completion of required prerequisite courses (across various academic disciplines) in addition to the following gateway requirements:

- Introduction to Engineering, Statics, and Calculus II must be completed with a grade of "B" or better.
- Introduction to Chemistry (Chemistry 101) must be completed with a grade of "C" or better.

Students are permitted to retake two of the gateway courses one time to earn the required grade.

Enrolling in a gateway course at UMBC or another institution is considered an attempt.

For full details on these requirements, visit the "Required Courses and Prerequisites" section of our website at [shadygrove.umbc.edu/program/mechanical-engineering](https://shadygrove.umbc.edu/program/mechanical-engineering).

Please reach out to [usgmeadvising@umbc.edu](mailto:usgmeadvising@umbc.edu) to schedule a pre-transfer advising appointment for further support and guidance.

# MEET THE DIRECTOR

*“Do you want to contribute to making systems more efficient and sustainable for society? Are you interested in how things work? Do you take things apart to understand their inner workings? Consider a degree in mechanical engineering!”*

*I have been fascinated by mechanical systems ever since I can remember. As a preschooler, I would ask my dad to take me to the observation deck at the airport to watch planes take off and land. I earned degrees in naval architecture, aeronautics, and astronautics, and I conduct research in biomedical engineering.*

*The application of fluid mechanics to the design process is common across these professions. As a mechanical engineer, you will learn fundamental skills that can be applied across almost every industry and you will find that you have the ability to express your creativity within the design process.”*

– Dr. Charles Eggleton  
Program Director,  
Mechanical Engineering at UMBC-Shady Grove

**TEACHING STYLE:** Promotes student learning and content retention by engaging students in classroom activities. Students develop their problem-solving skills and learn to think like engineers by proposing and discussing solutions to problems in an open environment.

**PROFESSIONAL PAST:** Joined the Mechanical Engineering Department at UMBC in January 1998. Served as the undergraduate program director for three years and participated in the implementation of online tools that enabled students to audit their academic progress. Served as Department Chair from 2012 through 2017. Acted as an academic advisor to over a hundred students.

**ACADEMIC AREAS OF FOCUS:** Taught or co-taught undergraduate courses in the thermal-fluids track. Research involves using software to simulate flow over biological cells in order to understand the role of hydrodynamic forces on cellular adhesion to surfaces.

**INTERESTING FACT:** I’m not sure if I can say English is my first language. Growing up in California my mother spoke to me in Spanish. Right before starting the first grade, I lived in Mexico for over six months and forgot how to speak English when I returned home. Having lived in Maryland for over 25 years, I speak mostly English and I’m always looking for opportunities to speak in Spanish.

## Questions about the Mechanical Engineering Program?

Contact Dr. Charles Eggleton at [eggleton@umbc.edu](mailto:eggleton@umbc.edu) or visit our website.



## DR. CHARLES EGGLETON

Program Director,  
Mechanical Engineering at  
UMBC-Shady Grove

# EXPLORE MECHANICAL ENGINEERING AT UMBC

To learn more about the B.S. in Mechanical Engineering at UMBC at the Universities at Shady Grove, visit [shadygrove.umbc.edu/program/mechanical-engineering](https://shadygrove.umbc.edu/program/mechanical-engineering).