

MECHANICAL ENGINEERING DEPARTMENT
University of Maryland Baltimore County, (UMBC)
1000 Hilltop Circle
Baltimore, MD 21250

Mission

The mission of the Mechanical Engineering Department is to provide a program of learning opportunities enabling students to become:

1. *Well educated professionals in Mechanical Engineering in accordance with modern standards and expectations of this field.*
2. *Intellectually curious and accomplished to the point of being independent thinkers, inventors, and creators of knowledge in Mechanical Engineering.*
3. *Broadly educated in the humanities, social sciences and ethics, and sensitive to our own as well as foreign cultures.*

Goal:

The Mechanical Engineering Department at UMBC strives to become the PROGRAM OF Choice in the Baltimore-Washington region for students to become international leaders in the Mechanical Engineering profession serving, industry, research laboratories and academia.

Objectives:

Undergraduate Education: Provide to approximately 300 students (sophomore through senior years) per year an honors education in general Mechanical Engineering that emphasizes a research or independent studies opportunity working with individual faculty members. The program seeks to give students a choice in specializing in the main areas of faculty research activity. These areas are Design, Manufacturing, and Systems (DEMS), Biomechanics (BIOM), Solid Mechanics and Materials Science (SMMS) and Thermal/Fluid Sciences (THFL), including emerging technologies such as MEMS, Micro-fluidics and nano-technologies. It is envisioned that an undergraduate Bio-mechanical track will be established as needed to prepare our students in areas of emerging technologies.

Our objective is to graduate approximately 65 to 70 B.S. Mechanical Engineering each year. The recruitment and graduation of minority and women students will be a priority.

The undergraduate program will also focus on increased enrollment (up to 15 students per year) in the combined BS/MS program.

Graduate Education: The Department currently offers two graduate degree programs; the M.S. and Ph.D. degrees in Mechanical Engineering. These are primarily research degrees. Although in some cases the M.S. degree may be based on primarily course work and no thesis, it nevertheless requires research exposure. Our goal is to broaden the graduate degree offerings to meet the needs of industry and local professional engineers for updated skills. To this end the Department has developed two specialized graduate certificate programs which consist of four courses each. These programs which have been approved and are currently running are in the Computational Thermal/Fluid Dynamics (CTFD) and the Mechatronics areas. Two more certificate programs are under consideration, one in Computational Structural Mechanics and one in Biomechanics. Furthermore, the Department intends to develop a professionally oriented Masters degree (Masters in Mechanical Engineering, MME) which will not be research oriented and will be focused on advanced learning for practicing professionals. All these programs will be accommodated within the present Department capacities. The goal is to enroll approximately 50 part time graduate students per year primarily in the certificate and MME programs. In addition, the graduate program at steady-state, aims at enrolling approximately 25 full time students in the M.S. program and 50 full time students in the Ph.D. program.

Research: The Department goal is to be among the leading research Mechanical Engineering Departments in scholarly productivity in our chosen areas of research emphasis, namely DMS, BIOM, SMMS, THFL and most recently in the area of emerging technologies such as MEMS, Micro-fluidics and nano-technologies. Research funding will be sought from industry as well as State and Federal sources. The goal is to fully support an average of 3 Graduate Research Assistants (GRAs) per faculty per year plus the material costs of the research by way of externally funded research grants. The product of this research is expected to be scholarly papers in research journals, books, patents, software and aid to MD industry in quality and quantity that will make the Department a sought after national resource in our fields of specialty.