

# Mechanical Engineering

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(Bachelor of Science)

## UW-Green Bay Engineering

One of the fastest-growing regions in the state and the Midwest for engineering jobs, Northeast Wisconsin will see tremendous growth in the need for and recruitment of new engineers. This region has the most open positions for engineers in the state and has seen an 18% increase in demand for engineers since 2010. Engineering as a career focuses on theoretical aspects of mathematical, scientific and engineering principals. New professionals with a Bachelor of Science in Mechanical Engineering from UW-Green Bay will be perfectly-timed and well-prepared to meet the swell in demand for engineers, leading to high-paying, rewarding careers in some of the region's most sought after employers.

## Mechanical Engineering

The University of Wisconsin-Green Bay is proud to be home of the only Mechanical Engineering program in Northeast Wisconsin. Part of the College of Science, Engineering and Technology (CSET) and offered through the (<https://www.uwgb.edu/mechanical-engineering/stem-center/>)Richard J. Resch School of Engineering (RSE), the Bachelor of Science (B.S.) in Mechanical Engineering is designed as a cutting-edge program that will offer students individualized attention from award-winning professors, a hands-on education with state-of-the-art equipment, and opportunities for research and internships with some of the largest companies and employers in the region. The UW-Green Bay Mechanical Engineering program is housed in the newly constructed STEM Innovation Center building.

Mechanical engineering is a diverse and flexible engineering discipline. Mechanical engineers work in number of fields including design of machinery, controls, vibrations and acoustics, power generation, renewable energy, energy conservation, fluid flow and heat transfer applications, and air-conditioning. The program synthesizes math, science, engineering science, and engineering design. The program provides electives in several general areas, including thermal-sciences, mechanical design and manufacturing, robotics and automation, mechanical and environmental systems, and renewable energy. Students begin the practice of design in their freshman year and integrate it throughout their programs which culminate in a team-oriented capstone design project in the senior year. The program is geared to prepare students for the lifelong practice of mechanical engineering and for immediate entry to positions in industry or further studies in graduate schools.

Students will benefit from relationships with local technical colleges, and local industry to complete a B.S. in engineering in the Northeast Wisconsin area. Students may start earning their degree at UW-Green Bay or local technical colleges to give maximum flexibility in degree completion. In addition, the Northeast Wisconsin Educational Resource Alliance, NEW ERA, has established advisory boards linking leaders in regional industry and participating institutions to the major. Through these relationships students will have many opportunities for internships, co-op experiences, and employment after graduation.

## Mechanical Engineering Program Learning Outcomes

1. Be employed as a mechanical engineer and perform all functions assigned to a mechanical engineer including completing engineering designs and other applications using both practical and theoretical knowledge characterized by their interdisciplinary strengths.
2. Function effectively both as a leader and as a mentor of project teams, demonstrating effective communication skills and ethical behavior.
3. Achieve positions of increased responsibility within an organization and practice continued education through advanced degree or certificate programs or participation in continuing education in engineering or related professional fields.
4. Adapt to changing industrial and technological advancements and be committed to continuous improvement.

## Contact

For more information contact:

Jagadeep Thota, Ph.D.  
 Chair, Engineering  
 Phone: 920-465-2817  
 Email: thotaj@uwgb.edu

or

Patricia Terry, Ph.D.  
 Chair, Richard J. Resch School of Engineering  
 Phone: 920-465-2749  
 Email: terryp@uwgb.edu

## Major

Code	Title	Credits
<b>Supporting Courses</b>		<b>33-39</b>
ENGR 236	Technical Writing and Information Literacy	
MATH 202	Calculus and Analytic Geometry I	
MATH 203	Calculus and Analytic Geometry II	
MATH 209	Multivariate Calculus	
MATH 260	Introductory Statistics	
ME 104	Engineering Graphics	
ME 204	Introduction to MATLAB Programming	
MET 207	Computer Aided Design	
PHYSICS 202	Principles of Physics II	
PHYSICS 204	Introductory Physics Lab II	
<b>Chemistry options (choose one):</b>		
CHEM 211 & CHEM 212 & CHEM 213 & CHEM 214 or ME 206	Principles of Chemistry I and Principles of Chemistry II and Principles of Chemistry I Laboratory and Principles of Chemistry II Laboratory Chemistry for Engineers	
<b>Fundamentals Courses</b>		<b>16</b>
ME 201	Engineering Materials	
ME 213	Mechanics I	
ME 214	Mechanics II	
ME 216	Basic and Green Manufacturing Processes	
ME 220	Mechanics of Materials	
ME 221	Mechanics of Materials Lab	
<b>Upper-Level Courses</b>		
<b>Supporting Courses</b>		<b>7</b>
MATH 305	Ordinary Differential Equations	
ME 326	Numerical Methods	
<b>Fundamentals Courses</b>		<b>6</b>
ME 308	Electrical and Electronic Circuits	
ME 312	Engineering Measurements	
ME 313	Engineering Measurements Lab	
<b>Advanced Courses</b>		<b>23</b>
ME 324	Engineering Thermodynamics	
ME 336	Fluids	
ME 337	Fluids Lab	
ME 340	Analysis of Dynamic Systems	
ME 408	Finite Element Analysis	
ME 420	Machine Component Design I	
ME 430	Heat Transfer	
ME 431	Thermal Lab	
ME 432	Automatic Controls	
<b>Capstone Requirement</b>		<b>3</b>
ME 460	Senior Design	
<b>Technical Electives (choose three courses):</b>		<b>9</b>
ET 360	Project Management	
MET 385	Robotics	
MET 390	Mechatronics	
ET 400 or ME 494	Co-op/Internship in Engineering Technology Co-op	

ME 334	Industrial Decision Processes
ME 344	Mechanical Vibration
ME 422	Machine Component Design II
ME 498	Independent Study

**Total Credits** **97-103**

## Curriculum Guide

The following curriculum guide is for a four-year **Mechanical Engineering** degree program and is subject to change without notice. Students should consult their program advisor to ensure that they have the most accurate and up-to-date information available.

Total **123** credits necessary to graduate.

Course	Title	Credits
<b>Freshman</b>		
<b>Fall</b>		
MATH 202	Calculus and Analytic Geometry I	4
ME 104	Engineering Graphics	1
ME 206	Chemistry for Engineers	4
First Year Seminar (FYS)		3
General Education		3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
MATH 203	Calculus and Analytic Geometry II	4
MATH 260	Introductory Statistics	4
ME 204	Introduction to MATLAB Programming	3
General Education		3
<b>Credits</b>		<b>14</b>
<b>Sophomore</b>		
<b>Fall</b>		
ENGR 236	Technical Writing and Information Literacy	3
MATH 209	Multivariate Calculus	4
ME 201	Engineering Materials	3
General Education		3
ME 213	Mechanics I	3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ME 214	Mechanics II	3
ME 216	Basic and Green Manufacturing Processes	3
ME 220	Mechanics of Materials	3
ME 221	Mechanics of Materials Lab	1
General Education		3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Junior</b>		
<b>Fall</b>		
MATH 305	Ordinary Differential Equations	4
ME 326	Numerical Methods	3
ME 308	Electrical and Electronic Circuits	3
PHYSICS 202 & PHYSICS 204	Principles of Physics II and Introductory Physics Lab II	5
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
ME 312	Engineering Measurements	2
ME 313	Engineering Measurements Lab	1
ME 324	Engineering Thermodynamics	3
ME 340	Analysis of Dynamic Systems	3
Technical Elective I		3
General Education		3
<b>Credits</b>		<b>15</b>

<b>Senior</b>		
<b>Fall</b>		
ME 336	Fluids	3
ME 337	Fluids Lab	1
ME 408	Finite Element Analysis	3
ME 420	Machine Component Design I	3
Technical Elective II		3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ME 430	Heat Transfer	3
ME 431	Thermal Lab	1
ME 460	Senior Design	3
Technical Elective III		3
General Education		3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>123</b>

Technical Electives (choose any three):

1. ME 422 Machine Component Design II (3 s.h.)
2. ME 432 Automatic Controls (3 s.h.)
3. ENGR 498 Independent Study (1-4 s.h.)
4. ET 360 Project Management (3 s.h.)
5. MET 385 Robotics (3 s.h.)
6. ET 390 Mechatronics (3 s.h.)
7. ET 400 Co-op/Internship in Engineering Technology (3 s.h.) or ENGR 494 Co-op (1-2 s.h.)
8. ET 415 Solar and Alternate Energy Systems (3 s.h.)

## Faculty

**Riaz Ahmed**; Associate Professor; Ph.D., University of South Carolina, chair

**Md Rasedul Islam**; Associate Professor; Ph.D., University of Wisconsin - Madison

**Jagadeep Thota**; Associate Professor; Ph.D., University of Nevada - Las Vegas

**Jian Zhang**; Associate Professor; Ph.D., Mississippi State University

**MD Assad-Uz-Zaman**; Assistant Professor; Ph.D., University of Wisconsin - Milwaukee

**Banda Fernando Cano**; Assistant Professor; D.Eng., Hiroshima University

**Carlos Ulises Gonzalez-Valle**; Assistant Professor; Ph.D., Penn State University