

# 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:

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## Major

Code	Title	Credits
<b>Supporting Courses</b>		<b>40</b>
MATH 202	Calculus and Analytic Geometry I	
MATH 203	Calculus and Analytic Geometry II	
MATH 260	Introductory Statistics	
MATH 209	Multivariate Calculus	
MATH 305	Ordinary Differential Equations	
CHEM 211 & CHEM 212 & CHEM 213 & CHEM 214 or ET 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	
ET 207	Parametric Modeling	
ENGR 104	Engineering Graphics	
ENGR 204	Programming for Engineers	
ENGR 236	Technical Writing	
ENGR 326	Numerical Methods	
PHYSICS 202	Principles of Physics II	
PHYSICS 204	Introductory Physics Lab II	
<b>Fundamentals Courses:</b>		<b>21</b>
ENGR 201	Engineering Materials	
ENGR 213	Mechanics I	
ENGR 214	Mechanics II	
ENGR 216	Basic Manufacturing Processes	
ENGR 220	Mechanics of Materials	
ENGR 221	Mechanics of Materials Lab	
ENGR 308	Electrical and Electronic Circuits	
ENGR 312	Engineering Measurements	
ENGR 322	Engineering Measurements Lab	
<b>Advanced Courses:</b>		<b>20</b>
ENGR 324	Engineering Thermodynamics	
ENGR 336	Fluids	
ENGR 337	Fluids Lab	
ENGR 340	Analysis of Dynamic Systems	
ENGR 408	Finite Element Analysis	
ENGR 420	Machine Component Design I	
ENGR 430	Heat Transfer	
ENGR 431	Thermal Lab	
<b>Capstone Requirement:</b>		<b>3</b>
ENGR 460	Senior Design	
<b>Technical Electives: (choose three courses)</b>		<b>9</b>
ET 360	Project Management	
ET 385	Robotics	
ET 390	Mechatronics	
ET 400 or ENGR 494	Co-op/Internship in Engineering Technology Co-op	
ET 415	Solar and Alternate Energy Systems	
ENGR 334	Industrial Decision Processes	
ENGR 344	Mechanical Vibration	
ENGR 422	Machine Component Design II	
ENGR 432	Automatic Controls	

ENGR 498

Independent Study (up to 3 credits)

**Total Credits****93**

## 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
ET 206	Chemistry for Engineers	4
ENGR 104	Engineering Graphics	1
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
ENGR 204	Programming for Engineers	2
ET 207	Parametric Modeling	2
MATH 260	Introductory Statistics	4
General Education		3
		<b>Credits</b>
		<b>15</b>
<b>Sophomore</b>		
<b>Fall</b>		
MATH 209	Multivariate Calculus	4
ENGR 201	Engineering Materials	2
ENGR 213	Mechanics I	3
ENGR 236	Technical Writing	3
General Education		3
		<b>Credits</b>
		<b>15</b>
<b>Spring</b>		
ENGR 214	Mechanics II	3
ENGR 216	Basic Manufacturing Processes	3
ENGR 220	Mechanics of Materials	3
ENGR 221	Mechanics of Materials Lab	1
General Education		3
General Education		3
		<b>Credits</b>
		<b>16</b>
<b>Junior</b>		
<b>Fall</b>		
PHYSICS 202 & PHYSICS 204	Principles of Physics II and Introductory Physics Lab II	5
MATH 305	Ordinary Differential Equations	4
ENGR 326	Numerical Methods	3
ENGR 308	Electrical and Electronic Circuits	3
		<b>Credits</b>
		<b>15</b>
<b>Spring</b>		
Technical Elective I		3
ENGR 312	Engineering Measurements	2
ENGR 322	Engineering Measurements Lab	1

ENGR 324	Engineering Thermodynamics	3
ENGR 340	Analysis of Dynamic Systems	3
General Education		3
<b>Credits</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
Technical Elective II		3
ENGR 336	Fluids	3
ENGR 337	Fluids Lab	1
ENGR 408	Finite Element Analysis	3
ENGR 420	Machine Component Design I	3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Technical Elective III		3
ENGR 430	Heat Transfer	3
ENGR 431	Thermal Lab	1
ENGR 460	Senior Design	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. ENGR 334 Industrial Decision Processes (3 s.h.)
2. ENGR 344 Mechanical Vibration (3 s.h.)
3. ENGR 422 Machine Component Design II (3 s.h.)
4. ENGR 432 Automatic Controls (3 s.h.)
5. ENGR 498 Independent Study (1-4 s.h.)
6. ET 360 Project Management (3 s.h.)
7. ET 385 Robotics (3 s.h.)
8. ET 390 Mechatronics (3 s.h.)
9. ET 400 Co-op/Internship in Engineering Technology (3 s.h.) or ENGR 494 Co-op (1-2 s.h.)
10. ET 415 Solar and Alternate Energy Systems (3 s.h.)

## Faculty

**John F Katers**; Professor; Ph.D., Marquette University\*

**Patricia A Terry**; Professor; Ph.D., University of Colorado, chair\*

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

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