

# Electrical 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 Electrical 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.

## Electrical Engineering

The University of Wisconsin-Green Bay is proud to announce the newest engineering program in Northeast Wisconsin, the Electrical Engineering program. Part of the College of Science, Engineering and Technology (CSET) and offered through the Richard J. Resch School of Engineering (RSE), the Bachelor of Science (B.S.) in Electrical 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.

Electrical engineering is the application of scientific and mathematical principles to the design, manufacture, and control of structures, machines, processes, and systems. In the past, the work of electrical engineers has had a direct and vital impact on people's lives. Electrical engineers have been responsible for the creation of electric power, modern electronics, computers, electronic communication systems, modern flight controllers, automated manufacturing, and medical diagnostic tools. An electrical engineering education continues to provide opportunities for solving problems of great social significance and for increasing people's quality of life. The electrical engineering program spans the disciplines of electronics, computers, circuits, electromagnetic fields, power systems, controls, communications, and signal processing.

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.

## Contact

For more information contact:

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## Major

Code	Title	Credits
<b>Supporting Courses</b>		<b>38-44</b>
ENGR 236	Technical Writing	
ET 105	Fundamentals of Drawing	
ET 142	Introduction to Programming	
MATH 202	Calculus and Analytic Geometry I	
MATH 203	Calculus and Analytic Geometry II	
MATH 209	Multivariate Calculus	
MATH 260	Introductory Statistics	
MATH 305	Ordinary Differential Equations	
PHYSICS 201	Principles of Physics I	

PHYSICS 203	Introductory Physics Lab I	
<b>Chemistry (choose one option):</b>		
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	
<b>Fundamental Courses</b>		<b>22</b>
ENGR 120	Electrical Circuits I	
ENGR 121	Electrical Circuits I Lab	
ENGR 210	Electrical Circuits II	
ENGR 211	Electrical Circuits II Lab	
ENGR 222	Electronic Devices	
ENGR 223	Electronic Devices Lab	
ENGR 224	Electrical Codes, Safety, and Standards	
ENGR 320	Energy Conversion	
ENGR 321	Energy Conversion Lab	
ENGR 328	Microcontrollers and Programmable Logic Controllers	
ENGR 329	Microcontrollers and Programmable Logic Controllers Lab	
<b>Advanced Courses</b>		<b>20</b>
ENGR 310	Digital Logic Design	
ENGR 311	Digital Logic Design Lab	
ENGR 342	Signals and Systems	
ENGR 343	Signals and Systems Lab	
ENGR 346	Electrical Power Systems	
ENGR 348	Electromagnetic Fields and Applications	
ENGR 412	Communications Systems	
ENGR 434	Power Electronics	
<b>Capstone Requirement</b>		<b>3</b>
ENGR 462	Senior Design Project	
<b>Technical Electives (choose four courses):</b>		<b>12</b>
ET 342	Supervisory Control and Data Acquisition	
ET 400 or ENGR 494	Co-op/Internship in Engineering Technology Co-op	
ET 415	Solar and Alternate Energy Systems	
ENGR 334 or ET 360	Industrial Decision Processes Project Management	
ENGR 402	Smart Cities: Engineering the Future	
ENGR 414	Power System Analysis and Protection	
ENGR 426	Wireless Communications	
ENGR 428	Wireless Networks	
ENGR 438	Microprocessors and Embedded Systems	
ENGR 493	Special Topics in Electrical Engineering	
ENGR 498	Independent Study	
<b>Total Credits</b>		<b>95-101</b>

## Curriculum Guide

The following curriculum guide is for a four-year **Electrical 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 **125** credits necessary to graduate.

Course	Title	Credits
<b>Freshman</b>		
<b>Fall</b>		
MATH 202	Calculus and Analytic Geometry I	4
ET 105	Fundamentals of Drawing	3
First Year Seminar (FYS)		3
General Education		3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 203	Calculus and Analytic Geometry II	4
ENGR 120	Electrical Circuits I	3
ENGR 121	Electrical Circuits I Lab	1
ET 142	Introduction to Programming	3
General Education		3
<b>Credits</b>		<b>14</b>
<b>Sophomore</b>		
<b>Fall</b>		
MATH 209	Multivariate Calculus	4
PHYSICS 201 & PHYSICS 203	Principles of Physics I and Introductory Physics Lab I	5
ET 206	Chemistry for Engineers	4
ENGR 210	Electrical Circuits II	3
ENGR 211	Electrical Circuits II Lab	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 260	Introductory Statistics	4
ENGR 222	Electronic Devices	3
ENGR 223	Electronic Devices Lab	1
ENGR 224	Electrical Codes, Safety, and Standards	2
ENGR 320	Energy Conversion	3
ENGR 321	Energy Conversion Lab	1
ENGR 236	Technical Writing	3
<b>Credits</b>		<b>17</b>
<b>Junior</b>		
<b>Fall</b>		
MATH 305	Ordinary Differential Equations	4
ENGR 310	Digital Logic Design	3
ENGR 311	Digital Logic Design Lab	1
ENGR 342	Signals and Systems	3
ENGR 343	Signals and Systems Lab	1
ENGR 348	Electromagnetic Fields and Applications	3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
ENGR 328	Microcontrollers and Programmable Logic Controllers	3
ENGR 329	Microcontrollers and Programmable Logic Controllers Lab	1
ENGR 346	Electrical Power Systems	3
ENGR 434	Power Electronics	3
General Education		3
General Education		3
<b>Credits</b>		<b>16</b>
<b>Senior</b>		
<b>Fall</b>		
ENGR 412	Communications Systems	3
ENGR 462	Senior Design Project	3
Technical Elective I		3
Technical Elective II		3
General Education		3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
Technical Elective III		3
Technical Elective IV		3

General Education	3
General Education	3
General Education	3
<b>Credits</b>	<b>15</b>
<b>Total Credits</b>	<b>125</b>

Technical Electives (choose any four):

1. ET 342 Supervisory Control and Data Acquisition (3 s.h.)
2. ET 400 Co-op/Internship in Engineering Technology (3 s.h.) or ENGR 494 Co-op (1-2 s.h.)
3. ET 415 Solar and Alternate Energy Systems (3 s.h.)
4. ET 360 Project Management (3 s.h.) or ENGR 334 Industrial Decision Processes (3 s.h.)
5. ENGR 402 Smart Cities: Engineering the Future (3 s.h.)
6. ENGR 414 Power System Analysis and Protection (3 s.h.)
7. ENGR 426 Wireless Communications (3 s.h.)
8. ENGR 428 Wireless Networks (3 s.h.)
9. ENGR 438 Microprocessors and Embedded Systems (3 s.h.)
10. ENGR 493 Special Topics in Electrical Engineering (3 s.h.)
11. ENGR 498 Independent Study (1-4 s.h.)

## Faculty

**Maruf Hossain**; Professor; Ph.D., University of Memphis

**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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