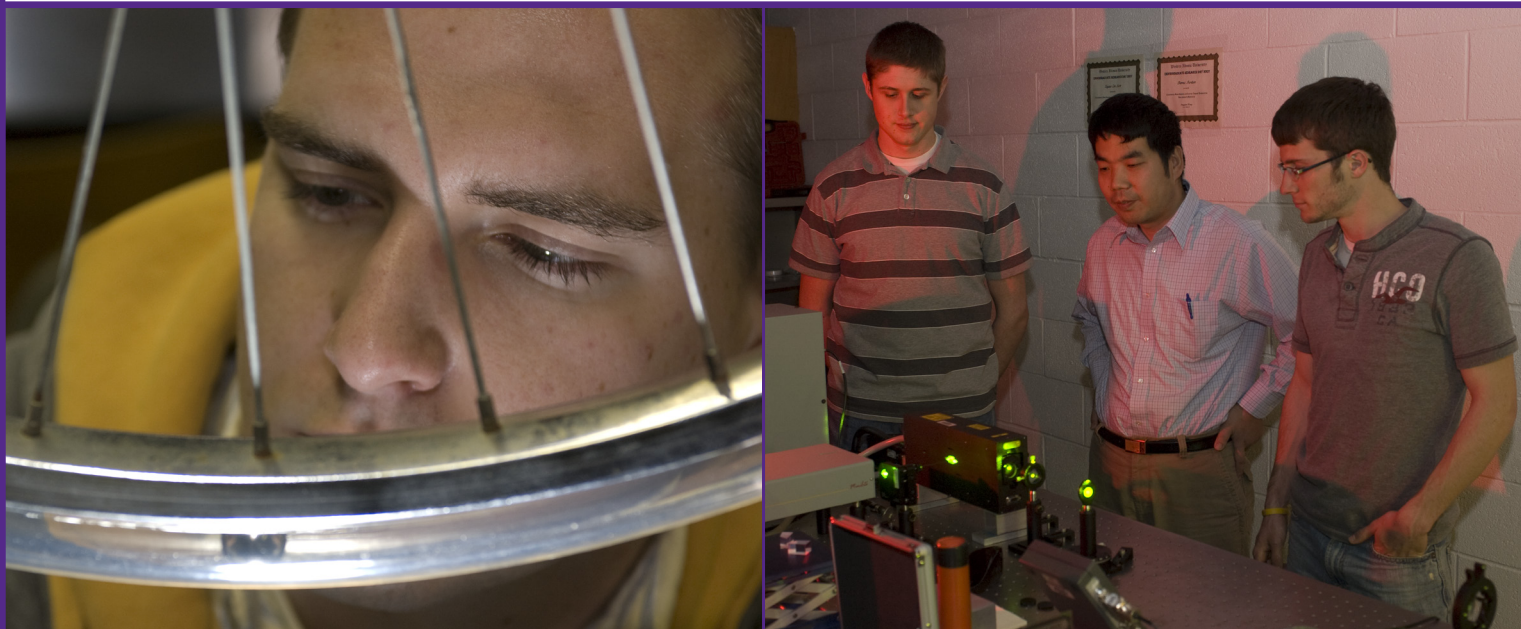


# Engineering Physics

Department of Physics, College of Arts & Sciences



## Why Engineering Physics?

Engineering Physics majors blend courses from Engineering, Physics, and Math to build an understanding of how these areas interact and support each other. You'll boost your knowledge of the physical environment while discovering how physics is applied to problem-solving in our rapidly changing high-tech world.

As an Engineering Physics major, you'll study the fundamentals and intricacies of both engineering and physics, including electricity and magnetism, statics and dynamics, strength of materials, thermodynamics, and fluid dynamics. Other possibilities include astrophysics or space science, and the study or development of optical materials or superconductors. You'll also take advanced courses in calculus and differential equations. Laboratory work will teach you how to use experimental techniques and will give you hands-on experience with high-tech equipment.

An Engineering Physics major comes in handy for a range of job opportunities, including positions in research and development (R&D) at high-technology industries as well as jobs in national laboratories and universities. Further career development may lead to a position as staff engineer, scientist, or technical director. (Adapted from *The Princeton Review*, [www.princetonreview.com](http://www.princetonreview.com))

## What Is Engineering Physics at WIU?

The Engineering Physics option at WIU is an enhanced version of our Pre-Engineering program. The Pre-Engineering core is an educational package designed to meet the first requirement for the education of a traditional engineer—a foundation of complex mathematics and science courses. This foundation is common to nearly all types of engineering education and often can be provided more efficiently by a smaller university such as WIU than by the institutions which house the engineering colleges themselves.

The Engineering Physics option at WIU builds on this core by introducing students in their third year to the more advanced conceptual and mathematical approaches to mechanics, electromagnetism, thermodynamics, quantum mechanics, and advanced laboratory equipment used in the study of physics. This gives students a much deeper understanding of the ideas behind even the most modern technologies. Students then transfer to the engineering program at the institution of their choice (including WIU-Quad Cities) to complete an engineering degree. Students obtain two degrees: Physics with the Engineering Physics option at WIU-Macomb and Engineering from their second institution or from WIU-Quad Cities. These graduates are well-suited to take advantage of the growing need for technically trained and conceptually savvy workers in the 21st century workforce!

## Why Select Engineering Physics at WIU?

The strongly coordinated Engineering Physics program at the WIU-Macomb campus will qualify students to transfer with little difficulty to some of the premier engineering programs in the nation, including the University of Illinois at Urbana-Champaign (UIU-C), the University of Iowa, and the Illinois Institute of Technology. Western Illinois University provides good economic value; low student-to-faculty ratios in all the core courses; and excellent faculty in the areas of physics, mathematics, and chemistry who are committed to the success of the students both in the classroom and through one-on-one interaction. Completion of the Engineering Physics program with a satisfactory grade point average (GPA) provides an opportunity for students to begin their engineering education at a smaller university with a more nurturing environment and then transfer to some of the best high-demand engineering discipline programs in the world. Students who transfer from Western are historically very successful at their transfer institutions and in their future careers.

### Engineering Physics Program at WIU

The Engineering Physics program described below prepares students for a smooth transfer to the engineering school at the institution of their choice, including the WIU-Quad Cities campus. The third-year options reflect some, but not all, possible course choices. Physics courses will be chosen to strongly prepare students for high demand engineering discipline programs including civil, environmental, mechanical, biomedical, aerospace, nuclear, and computer engineering. Eighteen credits in Engineering are transferred back to WIU from the transfer institution.

First Year				Second Year			
Fall Semester		Spring Semester		Fall Semester		Spring Semester	
MATH 133	4 SH	MATH 134	4 SH	CHEM 201	4 SH	CHEM 202	4 SH
PHYS 211	4 SH	PHYS 212	4 SH	MATH 231	4 SH	MATH 333	3 SH
ENG 180	3 SH	PHYS 310	3 SH	MATH 183	1 SH	PHYS 214	3 SH
ET 105	3 SH	CS 225	3 SH	PHYS 213	4 SH	PHYS 367	3 SH
Elective*	3 SH	Elective*	3 SH	MATH 311	3 SH	ENG 280	3 SH
<b>17 SH</b>		<b>17 SH</b>		<b>16 SH</b>		<b>16 SH</b>	

Third Year – Option 1				Third Year – Option 2			
Fall Semester		Spring Semester		Fall Semester		Spring Semester	
COMM 241	3 SH	PHYS 312	4 SH	COMM 241	3 SH	PHYS 420	4 SH
PHYS 311	3 SH	PHYS 420	3 SH	PHYS 311	3 SH	PHYS 354	3 SH
PHYS 430	3 SH	PHYS 490	2 SH	PHYS 468	3 SH	PHYS 490	2 SH
PHYS 427/428	3/4 SH	PHYS 462	3 SH	PHYS 470	2 SH	PHYS 410	3 SH
Elective	2 SH	Elective	3 SH	Elective	3 SH	Elective	3 SH
Elective*	3 SH	Elective*	3 SH	Elective*	3 SH	Elective*	3 SH
<b>17/18 SH</b>		<b>18 SH</b>		<b>17 SH</b>		<b>18 SH</b>	

\* A language course is recommended to satisfy UIU-C's language requirement.

### Engineering Program at WIU-Quad Cities

Western Illinois University offers a BS degree in General Engineering at the WIU-Quad Cities campus. This program is a junior/senior program that articulates with WIU-Macomb's Pre-Engineering core. This Engineering program focuses on the practice of engineering by providing a broad curriculum which emphasizes basic engineering fundamentals, while allowing students to select an area of emphasis in Mechanical/Manufacturing Engineering or Electrical/Computer Engineering. Students seeking admission to the QC Engineering program must have an overall GPA of 2.5 and a grade of "C" or better in the Pre-Engineering core courses.

### Illinois Institute of Technology

In the fall of 2011, WIU signed an agreement with the Illinois Institute of Technology to participate in its Presidential Scholars Program for students who transfer into their Engineering Program. This scholarship emphasizes recruitment of underrepresented populations into the discipline of engineering. Recipients of the Presidential Scholarship receive a \$23,500 annual tuition scholarship award, renewable for up to three years at IIT; a \$5,000 annual housing scholarship award to support on-campus residence at the university; and up to a \$5,000 stipend for undergraduate research through IIT's Undergraduate Research Scholars Program.

### University of Iowa

WIU has an articulation agreement with the University of Iowa's College of Engineering. Students from WIU-Macomb are automatically accepted into the Engineering College if they complete the Engineering Physics option at WIU-Macomb with a 3.0 GPA and no more than one "C" grade in the Pre-Engineering core courses. The University of Iowa has one of the nation's premier Biomedical Engineering programs.

### University of Illinois

Transfer students to UIU-C are admitted on a competitive basis depending on space availability. Transfer students must have a minimum of a 2.6 GPA (4.0 = A) for consideration. Historically, the cutoff has been a 3.0 GPA (in the Pre-Engineering core courses) for Mechanical Engineering, Electrical and Computer Engineering, and Computer Science, and a 2.8 GPA for other departments. However, this fluctuates according to departmental need.

w i u . e d u / p h y s i c s

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