Undergraduate

Physics

SIUe

College of Arts and Sciences
Department of Physics

Degrees Available at SIUE

- Bachelor of Science in Physics

Specializations

- Astronomy
- Biomedical Physics
- Photonics and Laser Physics

Physics at SIUE

Immediate application of new physics knowledge is not what drives physicists, but rather, an inherent curiosity about everything around them. Physics explores the big questions about the universe, and students who are motivated, curious, mathematical, inventive, and wish to explore these big questions will find their place at SIUE. Students in the College of Arts and Sciences are taught by world-class scholars in state-of-the-art laboratories, with small class sizes to help ensure that students are not just faces in a crowded lecture hall. In the Department of Physics, students are welcomed into a community of faculty committed to providing the best education possible.

Career Opportunities

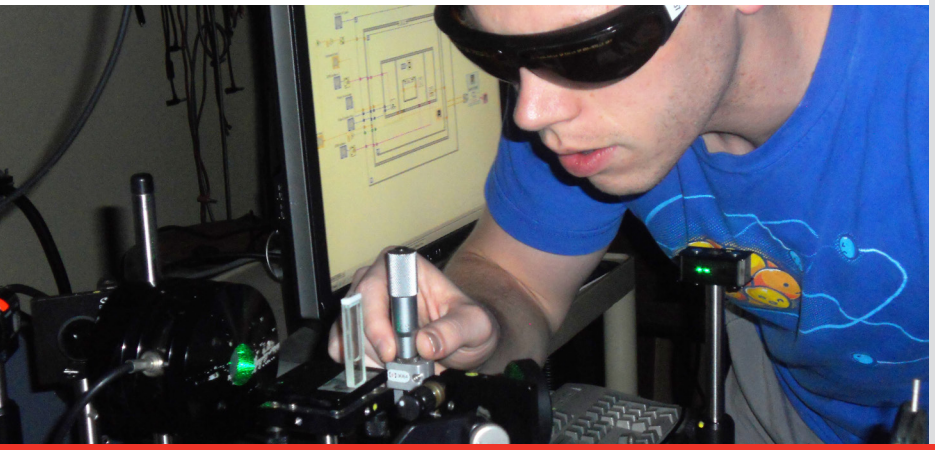
Earning a bachelor's degree in physics can open many doors. Throughout the United States, approximately one-third of students graduating with degrees in physics go on to graduate school to continue their education in physics or other science disciplines. Our graduates have recently gone on to pursue their education at the University of Arizona, the University of Colorado Boulder, and the University of New Mexico, as well as other quality programs. Some students, finding the rigor of physics excellent preparation for professional schools, pursue advanced education opportunities in medicine or law.

Career opportunities for students earning degrees in physics are available in the public and private sector. According to the U.S. Bureau of Labor Statistics, expected growth in federal government spending for physics research should increase the need for physicists - especially at colleges, universities and national laboratories. In the private sector, students find that their breadth of technical knowledge is welcomed across many sectors of industry. Currently, our alumni hold positions at Boeing, Caterpillar, in the military, and in other companies around the world.

While the Department of Physics does not offer a teaching degree, the Bachelor of Science curriculum can be customized to prepare students for teacher certification at a later time.

Hands-on Learning

Science requires a direct and guided experience with the world. At SIUE, students work in laboratories with their faculty mentors to learn new skills and build upon their existing knowledge base. Our students develop projects close to their own interests, or work with faculty to continue ongoing research. Students are also encouraged to apply for summer Research Experiences for Undergraduates (REU) programs and other summer internships in order to expand upon their experiences at SIUE while working in the world's best laboratories.



Faculty

At SIUE, our faculty provide opportunities for students to study numerous aspects of the discipline. Our experimental facilities allow students to explore how light interacts with nanoparticles, how starlight reveals distant planets, and how we make current flow without resistance. Our theoretical team is explaining how non-linear optics behaves and the importance of the shape and dynamics of bio-molecules. Our computational cluster is used to model biophysical systems and complex atomic systems. Our physics education research looks at how students solve problems in physics and is designing materials to make problem-solving easier.

Edward Ackad, PhD
2008, York University

Tom M. Foster, PhD
2000, University of Minnesota

Hernando Garcia, PhD
1999, New Jersey Institute of Technology
Rutgers, the State University of New Jersey

Jack Glassman, PhD
1997, University of New Mexico

Abdullatif Y. Hamad, PhD
1996, Oklahoma State University

David H. Kaplan, PhD
1983, Cornell University

Mark Patty, PhD
2009, University of Missouri

Jeffrey A. Sabby, PhD
2004, University of Arkansas - Fayetteville

Karen Vardanyan, PhD
2000, National Academy of Sciences - Armenia

Catherine Williams, MS
1999, Miami University

Mohammad Yousef, PhD
2002, Florida State University

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE
COLLEGE OF ARTS & SCIENCES

Sample Four-Year Curriculum

	Fall Semester		Spring Semester	
Year 1	PHYS 120 Frontiers in Physics: Past and Present	3	ENG 102 Composition II	3
	CHEM 131 Engineering Chemistry	4	ACS 101 or 103 Oral Expression	3
	CHEM 135 Engineering Chemistry Lab (EL)	1	**MATH 152** Calculus II (BPS)	5
	MATH 150 Calculus I (QR)	5	**PHYS 151** University Physics I (BPS)	4
	ENG 101 Composition	3	**PHYS 151L** University Physics I Laboratory (EL)	1
	Total Credits	16	Total Credits	16
Year 2	**PHYS 152** University Physics II (BPS)	4	PHYS 201 University Physics III (BPS)	4
	PHYS 152L University Physics II Laboratory (EL)	1	PHYS 201L University Physics III Laboratory (EL)	1
	MATH 250 Calculus III (BPS)	4	PHYS 251 Waves	4
	MATH 321 Linear Algebra I	3	MATH 305 Differential Equations	3
	RA 101 Reasoning & Argumentation	3	Breadth Humanities (BHUM)	3
	Total Credits	15	Total Credits	15
Year 3	P IS 364 The Atomic Era	3	PHYS 323 Statistical Mechanics (Odd Year)	4
	PHYS 304 Intro to Quantum Physics	4	PHYS 406 Electromagnetic Fields and Waves (Odd Year) or	3
	PHYS 321 Intro to Classical Mechanics	4	PHYS 314 Modern Data Acquisition (Even Year)	4
	Elective 1*	3	PHYS 318 Theory and Application of Elect Measure (Even Year)	3
	Total Credits	15	PHYS 376 Career Preparation in Physics	1
			CS 145 Introduction to Computing	3
			ENG 334 Scientific Writing	3
			Total Credits	13 or 15
Year 4	HYS 416 Principles of Quantum Mechanics	4	PHYS 314 Modern Data Acquisition (Even Year)	3
	Fine & Performing Arts (BFPA)	3	PHYS 318 Theory and Application of Elect Measure (Even Year)	3
	Breadth Life Science and Health Experience (BLS, EH)	3	or PHYS 323 Statistical Mechanics (Odd Year)	4
	Elective	3	PHYS 406 Electromagnetic Fields and Waves (Odd Year)	4
	PHYS 499a Senior Assignment Project: Part I	3	Elective 2*	3
	Total Credits	15	Breadth Social Sciences (BSS)	3
			PHYS 499b Senior Assignment Project: Part II	2
			Total Credits	14 or 16

NOTES — **Elective 1: PHYS 240 or 410 — *Elective 2: Choose one of the following: PHYS 230, 343, 397, 398, 442, 450, 472, 497, 498*

Transfer Students To maximize your transfer experience, complete the **bolded** courses/requirements pre-transfer **AND** satisfy either the Illinois Articulation Initiative (IAI) General Ed Core or receive an AA, AS, or AAT (early childhood, special ed or math) degree from an IAI community college. If 'Minor' requirements are shown, discuss careful course selection with the academic advising contact listed. Transfer Credit Equivalency Guides are located at siue.edu/transfer.

Global Experience

In the Department of Physics at SIUE, our faculty members represent several countries around the world, and we welcome international students. Our connections are strong in Latin America and the Middle East, and we collaborate with many international scholars. The physics major at SIUE is also flexible enough to allow students the opportunity to study abroad.

Admission Requirements

High school students who plan to major in physics should complete at least three years of college preparatory mathematics (two years of algebra and one year of geometry) before entering the University. A fourth year of college preparatory mathematics (to include trigonometry) and one year of physics and chemistry are strongly recommended.

Admission to a degree program in physics requires an application for a major and acceptance by the department. Once admitted, students are formally affiliated with the department and assigned an academic advisor in the College of Arts and Sciences. Advisement is mandatory; majors are permitted to register each term only after meeting with an academic advisor. Because the study of science is progressive, students are encouraged to select their major field of study early in their academic careers to ensure orderly progress toward meeting degree requirements. To be admitted, students already enrolled in the University must have a minimum grade point average of 2.0 in science and mathematics courses completed as well as a cumulative grade point average of 2.0 or higher in all courses taken at SIUE.

Transfer students should have a 2.0 or higher in science and mathematics courses as well as a 2.0 in courses taken at other colleges and universities.

Graduation Requirements

The following requirements must be met in order to obtain a degree in physics:

- Earn a minimum of 120 hours of acceptable credit with a cumulative grade point average of 2.0 or higher.
- Complete the minimum number of credit hours required for a particular degree.
- Complete at least 12 hours of SIUE credit in major courses numbered above 299 with a cumulative GPA of 2.0 or above.
- Earn a grade of C or better in all major courses numbered above 200.
- Complete at least six (6) hours of credit in major courses numbered above 299 earned at SIUE within two (2) years preceding graduation.

This information is concurrent with the 2018-2019 Academic Catalog. Courses are subject to change at any time.

Contact Information

Department of Physics | College of Arts and Sciences
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