

Bachelor of Science (BS)

Physics

Physics is perhaps the most fundamental of the sciences. It involves the study of the nature of basic things, such as motion, forces, energy, matter, heat, sound, light, and the atom. Physics reduces our knowledge of the world around us to a more orderly and satisfying form. It is successfully applied to solving problems of practical importance to society. Modern technology depends heavily upon physics, and technological progress follows advances in physics and the other basic sciences. The interest of physicists extends from the vast world of stars and galaxies to the minute world of atoms and elementary particles. Physicists did the pioneering work in the discovery and development of electrical and nuclear power, communication systems, solid state devices and integrated circuits, computers, jet propulsion, and interplanetary space navigation. They continue to search for more discoveries that will benefit society.

Physics students will...

- Obtain a deep understanding of the fundamental principles of science and mathematics.
- Have the ability to use the techniques, skills, and modern tools necessary for physics and engineering careers.
- Have the broad education necessary to understand the impact of physics and engineering solutions in a global, economic, environmental, and societal context.
- Be well prepared to obtain admission to the graduate school of their choice.

Career Planning

Career preparation is part of the mission of Southeast. 100% of programs offer our students an internship, study-abroad program, clinical opportunity, student teaching or research internship.

The Office of Career Services in Academic Hall 057 can provide students with professional career counseling and coaching, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more.

Internship and Employment Opportunities of Recent Graduates

- Schaefer's Electrical Enclosures
- Southeast Hospital
- Lighting Science Group Corporation
- U. S. Navy Officer
- U. S. Air Force Officer
- Wright Patterson Air Force Base
- Boeing
- Lockheed Martin
- NASA
- National Geospatial Intelligence Agency
- Valspar Corporation
- Rockwell Collins

Graduate Schools and Programs of Recent Graduates

- University of Arkansas – MicroEP Program
- Washington University – Physics
- Missouri S & T – Electrical Engineering
- University of Missouri – Physics
- Ball State University - BioMechanics
- Boise State University – Biomedical Engineering
- Western Kentucky University – Science Teaching
- University of North Texas – Physics
- University of Southern California – Physics
- University of Oklahoma – Physics
- Purdue University – Aerospace Engineering

Admission Requirements

A high school student interested in majoring in engineering physics should complete four years of mathematics that include trigonometry and an introduction to calculus. Four years of science, which include both chemistry and physics, is highly recommended. A strong background in English is essential.

Special Options with Physics

The physics major is structured in such a way that with the careful selection of technical electives along with a few extra courses, a student may obtain a minor in a cognate discipline such as engineering physics, computer science, or chemistry.

Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at semo.edu/transfercredit.

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This is a guide based on the 2018-2019 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use Degree Works to monitor their individual progress.

CURRICULUM CHECKLIST

"Critical Courses" are italicized and bolded. Data shows that students who have completed this course in the first two years and have earned the noted grade are most likely to complete this program of study.

Physics - 56 Hours – No minor required

A grade of 'C' or better is required in each course that is a prerequisite course.

- ___ EP100 Physics and Engineering Concepts (1)
- ___ EP240 Circuit Analysis (4)
- ___ EP340 Electronic Circuits (4)
- ___ EP361 Thermal Analysis (3)
- ___ EP462 Materials Science (3)
- ___ PH230/030 General Physics I (5)
- ___ PH231/031 General Physics II (5)
- ___ PH341 Optics (3)
- ___ PH360 Modern Physics (3)
- ___ PH370 Mechanics (3)
- ___ PH371 Electromagnetics (3)
- ___ PH473 Quantum Mechanics (3)
- ___ PH477 Physics Seminar (1)
- ___ PH478 Undergraduate Research (1)
- ___ PH479 Undergraduate Research (2)
- ___ PH570 Mathematical Physics (3)
- ___ UI330 Experimental Methods (3)
- ___ XX xxx Technical Electives (6)

Support Courses:

A grade of 'C' or better is required in each course that is a prerequisite course.

This sequence of mathematics courses constitutes a minor, but it must be declared.

- ___ CH185/085/005 General Chemistry (5)
- ___ CS177 Programming for Scientists and Engineers (3)
- ___ **MA140 Analytic Geometry and Calculus I (5)**
- ___ MA145 Analytic Geometry and Calculus II (4)
- ___ MA244 Analytic Geometry and Calculus III (4)
- ___ MA350 Differential Equations (3)
- ___ MAxxx Mathematics Elective (3) (300-500 level)

University Studies Requirements – some requirements may be fulfilled by coursework in major program

- Social and Behavioral Sciences – 3 hours
- Constitution requirement – 3 hours
- US History requirement – 3 hours
- Written Communication – 6 hours
- Oral Communication – 3 hours
- Natural Sciences – 7 hours (from two disciplines, one to include a lab)
- Mathematics – 3 hours
- Humanities & Fine Arts – 9 hours (from at least two disciplines)
- Additional requirements – 5 hours (to include UI100 for native students)

SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
FIRST YEAR	UI100	3	EN100	3
	CH185/085/005	5	MA145	4
	CS177	3	PH230/030	5
	EP100	1	University Studies	3
	MA140	5		
	Total	17	Total	15
Milestone: maintain 2.0 cumulative GPA				
SECOND YEAR	MA244	4	EP240	4
	PH231/031	5	MA350	3
	University Studies	3	University Studies	3
	University Studies	3	University Studies	3
			University Studies	3
	Total	15	Total	16
Milestone: maintain 2.0 cumulative GPA				
<i>(Summer courses are encouraged to avoid 18-hour semesters.)</i>				
THIRD YEAR	EP361	3	EP340	4
	PH360	3	EP462	3
	PH370	3	PH473	3
	UI330	3	Math Elective	3
	University Studies	3	Elective	1
	Total	15	Total	14
Milestone: maintain 2.0 cumulative GPA				
FOURTH YEAR	PH371	3	PH341	3
	PH477	1	PH479	2
	PH478	1	PH570	3
	Technical Elective	3	Technical Elective	3
	University Studies	3	University Studies	3
		University Studies	3	
	Total	14	Total	14
Milestone: maintain 2.0 cumulative GPA				

A "Milestone" signifies a significant stage for a student in the completion of a degree.

Degree requirements for all students: a minimum of 120 credit hours, completion of University Studies program, completion of 39 senior division hours (300-599), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level. Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.