

The teaching of physics offers a unique career opportunity.

Enthusiastic, innovative and well-prepared teachers are needed not

only to prepare high school students for careers in science but also to provide all students with an appreciation of science and how it has benefited society. This is especially true in physics, the most fundamental of the physical sciences. Physics describes and explains not only what goes on in our immediate surroundings but also in the minute world of atoms and elementary particles and the vast world of stars and galaxies. Physics teachers can help provide the knowledge that students need to understand and appreciate the world in which they live, and to show the many scientific ideas upon which modern technology is built.



### Physics Education students will...

- Obtain a deep understanding of the fundamental principles of physics and mathematics.
- Have the broad education necessary to understand the impact of physics and engineering concepts on everyday issues in a global, economic, environmental, and social context.
- Be well prepared, and certified, to teach introductory high school science courses in Missouri, and to teach upper level high school physics courses.
- Be well prepared to communicate science principles and concepts to the general public.

### 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.

There is currently a shortage of qualified physics teachers at the secondary level for which there is no immediate solution. Thus, graduates should have no difficulty in obtaining teaching positions. In addition, many of the school districts have the need for qualified science teachers who can teach several different sciences (e.g. chemistry, physics, earth science and biology). The unified science option certifies teachers to teach any high school physics course, plus the first courses in high school biology, chemistry, and earth science.

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.

### Employment Opportunities of Recent Graduates

- Physics Teacher
- General Science Teacher
- Chemistry Teacher
- Biology Teacher
- Earth Science Teacher
- Educational Administrator
- Science Supply Salesperson
- Textbook Sales Representative
- Laboratory Technician
- Hallsville High School, mathematics teacher
- Parkway West HS, physics teacher
- Cape Central HS, science teacher

### Admission Requirements

- 42 course hours completed
- 2.75 cumulative GPA
- Missouri Educator Profile (MEP) results on file with the Office of the Associate Dean of the College of Education
- Score of 220 or higher on all sections of the Missouri General Education Assessment (MoGEA)
- The following course requirements met
  - A grade of C or above in PY222 Development of the Adolescent
  - A grade of B or above in ED280 Introduction to Education as a Profession

### Additional Information

The state of Missouri has high expectations for future educators. Students matriculating into education programs must meet the following standards to be recommended for licensure following degree completion.

Students graduating spring 2017 or later must maintain a 3.0 GPA in both content and pedagogy courses. In addition students must pass the following Missouri Content Assessment Exams (Biology, Chemistry, Earth Science and Physics), and the Missouri Pre-Service Teacher Assessment for recommendation for licensure. Students must also fulfill other assessments such as the Missouri Educator Profile and be cleared through a FBI background check.

### Special Options with Secondary Education

Southeast offers a Master of Arts in Secondary Education: Educational Studies or Educational Technology.

### Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at [semo.edu/transfercredit](http://semo.edu/transfercredit).

# Physics Education: Unified Science

## Bachelor of Science in Education (BSED)

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 bold. 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.

#### Education Courses- 47 Hours Required

A grade of 'C' or better is required in education courses, with the exception of ED280 which requires a grade of 'B' or better.

- \_\_\_ **ED280 Introduction to Teaching (3)**
- \_\_\_ EF400 Student Teaching Seminar (1)
- \_\_\_ EX390 Psychology and Education of the Exceptional Child (3)
- \_\_\_ **PY222 Development of the Adolescent (3)**
- \_\_\_ SE307 Content Literacy Methods for Middle & High School (3)
- \_\_\_ SE320 Techniques of Teaching Science (3)
- \_\_\_ SE350 Pedagogy 1: Principles of Effective Teaching (3)
- \_\_\_ SE355 Field II (3)
- \_\_\_ SE365 Pedagogy 2: Secondary School-Interdisciplinary Methods and Technology (4)
- \_\_\_ SE380 Advanced Field (3)
- \_\_\_ SE385 Pedagogy 3: Advanced Methods of Middle and Secondary Teaching (3)
- \_\_\_ SE390 Instructional Interventions for Middle and Secondary Students with Special Literacy Needs (3)
- \_\_\_ SE465 Student Teaching (12)

#### Physics Education: Unified Science – 63 Hour Major - No Minor Required

Required Courses:

- \_\_\_ BS 218 Biological Science: A Process Approach (3)
- \_\_\_ CH 185/005/085 General Chemistry (5)
- \_\_\_ CH 186 Foundations of Inorganic Chemistry (3)
- \_\_\_ EP 100 Physics & Engineering Concepts (1)
- \_\_\_ EP 405 Engineering in Science Education (1)
- \_\_\_ GO 110 Physical Geology (3)
- \_\_\_ **MA 140 Analytical Geometry & Calculus I (5)**
- \_\_\_ MA 145 Analytical Geometry & Calculus II (4)
- \_\_\_ MA 244 Analytical Geometry & Calculus III (4)
- \_\_\_ PH 230/030 General Physics I (5)
- \_\_\_ PH 231/031 General Physics II (5)
- \_\_\_ PH 360 Modern Physics (3)
- \_\_\_ UI 318 Earth Science: Process Approach (3)
- \_\_\_ UI 330 Experimental Methods I (3)
- \_\_\_ UI 422 Scientific Reasoning (3)

Choose 3 Hours From:

- \_\_\_ BI 332 General Ecology (3)
- \_\_\_ GO 305 Environmental Geoscience (3)
- \_\_\_ UI 360 Recycling & Waste Mgt (3)
- \_\_\_ UI 372 Earthquakes & Society (3)

Choose 9 Hours From:

- \_\_\_ CS 177 Programming for Scientists/Engineers (3)
- \_\_\_ EP xxx
- \_\_\_ PH xxx

**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
<b>FIRST YEAR</b>	UI100	3	BS218	3
	CH185/005/085	5	CH186	3
	CS177/Physics elective	3	EN100	3
	EP100	1	MA145	4
	<b>MA140</b>	5	PH230/030	5
	<b>Total</b>	<b>17</b>	<b>Total</b>	<b>18</b>
Milestone: Maintain 2.75 cumulative GPA				
<b>SECOND YEAR</b>	MA244	4	<b>ED280</b>	3
	PH231/031	5	Physics Elective	3
	<b>PY222</b>	3	University Studies	3
	University Studies	3	University Studies	3
			University Studies	3
	<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>
Milestone: Maintain 2.75 cumulative GPA, Passing score MoGEA, Complete MEP				
<b>THIRD YEAR</b>	EX390	3	EP405	1
	PH360	3	SE307	3
	SE350	3	SE355	3
	UI330	3	SE365	4
	University Studies	3	UI422	3
			Physics Elective	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>17</b>	
<b>FOURTH YEAR</b>	SE320	3	GO110	3
	SE380	3	University Studies	3
	SE385	3	University Studies	3
	SE390	3	University Studies	3
	UI318	3	University Studies	3
	<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>
<b>FINAL SEMESTER</b>	EF400	1		
	SE465	12		
	<b>Total</b>	<b>13</b>		
Milestone: Passing score Mo Content Exam, MoPTA, 2.75 cumulative GPA, 3.0 GPA in Ed. courses; 3.0 GPA in content courses				

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 (MAP) at the senior level. Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.

Students have the option of adding another area of concentration or a minor to this degree.

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