

Physics Education: Unified Science

Bachelor of Science in Education (BSED)

Physics Education

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. In fact, more than 90% of Southeast students participate in internships, clinical opportunities, student teaching, research assistantships, and study abroad.

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.

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

Demonstrated Career Proficiency is a Requirement of all Southeast Students		
CL001/CL002	First Semester	Complete the FOCUS2 assessment and develop a Career Action Plan.
CL003	Junior Year	Students gain information about career planning and job searching resources.
CL004	Senior Year	Students demonstrate advanced proficiency by identifying a position in their field, developing a cover letter, and tailoring a resume for the position. Materials are critiqued to ensure preparedness for a successful job search.

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

Students graduating prior to spring 2017

- Cumulative 2.50 GPA
- Passage of CBASE or Missouri General Education Assessment (MoGEA)

Students graduating spring 2017 or later

- Cumulative 2.75 GPA
- Pass all sections of the Missouri General Education Assessment
Current Pass Scores for MoGEA
 - English - 186
 - Writing - 167
 - Math - 183
 - Science - 183
 - Social Studies – 183

All students must have:

- 42 hours of course credits
- Missouri Educator Profile (MEP) results on file
- Passage of all sections of the Missouri General Education Assessment (MoGEA) test.
- ED 280 Introduction to Teaching as a Profession with a grade of "B" or above
- PY222 Development of the Adolescent

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.

To learn more
 Office of Admissions
 (573) 651-2590
admissions@semo.edu
www.semo.edu

To explore the
 College of Science, Technology
 and Agriculture online, visit
www.semo.edu/costa

For advising
 Center for Academic Advising - North
 (573) 651-5090
www.semo.edu/advising
advisingnorth@semo.edu

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This is a guide based on the 2016-2017 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 DegreeWorks 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.

(Curriculum pending state approval)

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 (not already listed above):

UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literary Expression, Development of a Major Civilization, Economic Systems, Political Systems, Social Systems

SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
FIRST YEAR	UI100	3	BS218	3
	CH185/005/085	5	CH186	3
	CS177/Physics elective	3	EN100	3
	EP100	1	MA145	4
	MA140	5	PH230/030	5
	Total	17	Total	18
Milestone: Maintain 2.75 cumulative GPA, Complete MEP				
SECOND YEAR	MA244	4	ED280	3
	PH231/031	5	Physics Elective	3
	PY222	3	Develop of a Major Civ	3
	Written Expression	3	Economic Systems	3
			Social Systems	3
Total	15	Total	15	
Milestone: Maintain 2.75 cumulative GPA, Passing score MoGEA				
THIRD YEAR	EX390	3	EP405	1
	PH360	3	SE307	3
	SE350	3	SE355	3
	UI330	3	SE365	4
	Literary Expression	3	UI422	3
			Physics Elective	3
	Total	15	Total	17
FOURTH YEAR	SE320	3	GO110	3
	SE380	3	Environmental Science	3
	SE385	3	Artistic Expression	3
	SE390	3	Oral Expression	3
	UI318	3	Political Systems	3
	Total	15	Total	15
FINAL SEMESTER	EF400	1		
	SE465	12		
	Total	13		
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, career proficiencies (CL001-004), 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 DegreeWorks for additional graduation requirements (i.e. minimum GPA and additional options) for your program of study.

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