

# PHYSICS, BACHELOR OF SCIENCE WITH A CONCENTRATION IN PHYSICS TEACHING (B.S.)

## Program Objectives

Upon completion of this program the graduate will:

1. be able to apply mathematics to analyze problems in Physics;
2. be able to use fundamental physical results, such as conservation laws, to study physical systems;
3. be able to analyze important processes occurring in physical systems.

Additionally, graduates of this program will:

1. be prepared for employment in Physics or a related field in the public or private sector;
2. be prepared for admission to a graduate program in Physics or a related field;
3. be prepared to take and pass the Praxis exam in Physics; and physics teaching majors will be prepared to teach Physics in a secondary school.

## Program Requirements

CIP Code: 40.0801

### Summary Checklist for General Education

Code	Title	Hours
<b>Element 1</b>		
A:	Written Communication ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/</a> )	3
B:	Written Communication ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/</a> )	3
C:	Oral Communication ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-1/</a> )	3
<b>Element 2</b>		
	Quantitative Reasoning ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-2/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-2/</a> )	3
<b>Element 3</b>		
A:	Arts ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/</a> )	3
B:	Humanities ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-3/</a> )	3
<b>Element 4</b>		
	Natural Sciences ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-4/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-4/</a> )	6
<b>Element 5</b>		

A:	Historical Science ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/</a> )	3
B:	Social Behavioral Science ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-5/</a> )	3
<b>Element 6</b>		
	Diversity of Perspectives Experiences ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-6/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/element-6/</a> )	6
<b>Total Hours</b>		<b>36</b>

Students are expected to complete Elements 1 and 2 within their first 60 hours of college credit.

## Major

Code	Title	Hours
<b>University Graduation Requirements</b>		
General Education		36
<i>Student Success Seminar</i>		
SCO 100P	Student Success Seminar in Physics (waived for transfers with 30+ hrs.)	1
Upper division courses (42 hrs. distributed throughout Major/ Supporting/Gen Ed/Free Electives categories)		
<b>Major Requirements</b>		
<i>Core Courses</i>		
PHY 201 or PHY 131	University Physics I <sup>1</sup> College Physics I	5
PHY 202 or PHY 132	University Physics II <sup>2</sup> College Physics II	5
PHY 211	Intermediate Physics	4
PHY 302 or PHY 302W	Modern Physics Modern Physics	4
PHY 406 or PHY 406W	Advanced Physics Laboratory	3
<b>Concentrations</b>		
Students must select one of the following Concentrations:		
Physics (General)		
Engineering Physics		
Physics Teaching		54
<i>Free Electives</i>		
Choose from 8 hours of free electives <sup>3</sup>		8
<b>Total Hours</b>		<b>120</b>

1

At the discretion of the chair, PHY 131 College Physics I may be substituted for PHY 201 University Physics I.

2

For teaching majors PHY 132 College Physics II may be substituted for PHY 202 University Physics II.

3

Students who are interested in Medical Physics graduate programs are encouraged to take EHS 510 Radiological Health and Safety as a free elective.

**Concentration**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
<b>Concentration Courses</b>		
AST 135	Introductory Astronomy	3
AST 335	Stars, Galaxies, & Cosmology	3
Choose from three hours of PHY courses numbered 300 and above		3
<i>Supporting Course Requirements</i>		
BIO 100 or BIO 102	Introductory Biology (Element 4) <sup>G</sup> Inquiry Biology for Teachers	
CHE 111 & 111L	General Chemistry and General Chemistry Lab I (Element 4) <sup>G</sup>	
CHE 112 & 112L	General Chemistry II and General Chemistry Lab	4
MAT 234	Calculus I (Element 2) <sup>G,1</sup>	
MAT 244	Calculus II	4
<i>Professional Education Requirements</i>		
EDC 300	Differentiation in Inclusive Classrooms	3
EDF 203	Educational Foundations	3
EDF 204	Emerging Instructional Technologies	2
EDF 219	Human Development and Learning	3
EDF 413	Assessment in Education	3
EMS 300W	Curriculum and Instructional Design	3
EMS 474	Disciplinary Literacy	3
EMS 490	Classroom & Behavior Management	3
ESE 561	Teaching Science in Secondary School	3
SED 104	Special Education Introduction (Element 6) <sup>G</sup>	
Clinical Experiences:		
CED 100	Clinical I: Introduction to the Education Profession	0
CED 200	Clinical II: Understanding the Learner	0
CED 300	Clinical III: Curriculum and Instructional Design	0.5
CED 400	Clinical IV: Diagnosis and Prescription	0.5
CED 450	Clinical V: Practicing Teaching	1
CED 499	Clinical VI: The Professional Semester	9
<i>Exit Requirements</i>		
PRAXIS Examination		
Students must register for and take the PRAXIS exam which correlates to their degree program, per College of Education requirements. Refer to Degree Works for exam details. The PRAXIS exam must be taken prior to student teaching.		
<b>Total Hours</b>		<b>54</b>

**G**

Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above. Note that a max of 3 credit hours from one course may be applied each to any Gen. Ed. element.

**1**

A preparatory course (MAT 122 Precalculus Mathematics) in mathematics may be required before admission to MAT 234 Calculus I.