

# PHYSICS, BACHELOR OF SCIENCE WITH A CONCENTRATION IN PHYSICS (GENERAL) (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

### Major

Code	Title	Hours
<b>University Graduation Requirements</b>		
General Education ( <a href="http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/">http://catalogs.eku.edu/undergraduate/general-academic-information/general-education-requirements/</a> )		36
<i>Foundations of Learning</i>		
GSD 101	Foundations of Learning	3
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	Modern Physics	4
PHY 406	Advanced Physics Laboratory	4
<b>Concentrations</b>		
Students must select one of the following Concentrations:		
Physics (General)		
Engineering Physics	Physics Teaching	47
<i>Supporting Course Requirements</i>		
<i>Free Electives</i>		

Choose from 14 hours of free electives <sup>3</sup>	14
<b>Total Hours</b>	<b>122</b>

<sup>1</sup> At the discretion of the chair, PHY 131 College Physics I may be substituted for PHY 201 University Physics I.

<sup>2</sup> For teaching majors PHY 132 College Physics II may be substituted for PHY 202 University Physics II.

<sup>3</sup> Students who are interested in Medical Physics graduate programs are encouraged to take EHS 510 Radiological Health and Safety as a free elective.

## Concentration

Code	Title	Hours
<b>Concentration Courses</b>		
PHY 310	Theoretical Methods in Physics	3
PHY 421	Electricity and Magnetism I	3
PHY 422	Electricity and Magnetism II	3
PHY 456	Statistical and Thermal Physics	3
PHY 460	Classical Mechanics	4
PHY 470	Quantum Mechanics	3
Choose from three hours of any PHY course numbered 300 and above <sup>1</sup>		3
<i>Supporting Course Requirements</i>		
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
CSC 174	Introduction to Programming for Science & Engineering	3
MAT 234	Calculus I (Element 2) <sup>G,2</sup>	
MAT 244	Calculus II	4
MAT 254	Calculus III	4
MAT 353	Differential Equations	3
<b>Total Hours</b>		<b>40</b>

<sup>1</sup> Except PHY 506 Physics for High School Teachers

<sup>2</sup> A preparatory course (MAT 122 Precalculus Mathematics) in mathematics may be required before admission to MAT 234 Calculus I.

<sup>G</sup> 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.