

# BS in Physics

## Degree Program Description

Physics is the science that studies the structure and properties of matter and transformations of energy. With math as the language and experimental verification as a guide, physical study has established the fundamental laws of nature that are the foundation of all natural science and technology. The study of physics includes learning the general principles and the phenomena that have been discovered and developing the skills that enable such knowledge to be advanced through research. The BS degree in Physics is designed to prepare students for scientific careers immediately upon graduation, for further training in graduate school, or for teaching high school physics. Physics plays a pivotal role in such areas of expanding and societal importance as biomedical optical imaging/biomedicine, materials science, and homeland security, and as such, courses are offered in optical sciences, biological physics, materials sciences and nanotechnology. Students can specialize by pursuing a BS in physics with an emphasis in astronomy, biophysics, or materials science.

## Major Program Requirements

Students must complete the University general education (<http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/>) requirements and graduation requirements (<http://catalog.missouri.edu/academicdegreerequirements/universityrequirements/>) in addition to the Major Program Requirements below.

PHYSCS 2010	Undergraduate Seminar in Physics	1
PHYSCS 2750 & PHYSCS 2760	University Physics I and University Physics II	10
PHYSCS 3150W	Introduction to Modern Physics - Writing Intensive	3
PHYSCS 4060	Advanced Physics Laboratory I	4
PHYSCS 4100	Electricity and Magnetism I	3
PHYSCS 4120	Introduction to Thermodynamics	3
PHYSCS 4140	Mechanics	3
PHYSCS 4800	Introduction to Quantum Mechanics I	3
MATH 1500 & MATH 1700 & MATH 2300	Analytic Geometry and Calculus I and Calculus II and Calculus III	13
MATH 4100	Differential Equations	3
CHEM 1320 or CMP_SC 1050 or INFOTC 1040	College Chemistry I Algorithm Design and Programming I Introduction to Problem Solving and Programming	3-4
<b>Electives</b>		
Additional physics/astronomy		15
Additional math		6
<b>Total Credits</b>		<b>70-71</b>

## Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	CR	Spring	CR
PHYSCS 2010		1 PHYSCS 2750 <sup>1</sup>	5
MATH 1500 <sup>1</sup>		5 MATH 1700 <sup>1</sup>	5
CHEM 1320, CMP_SC 1050, or INFOTC 1040 <sup>1</sup>		3-4 General Education*	3-6
ENGLISH 1000*		3	
General education*		3	
			<b>13-16</b>
		<b>15-16</b>	<b>13-16</b>

Second Year			
Fall	CR	Spring	CR
PHYSCS 2760 <sup>1</sup>		5 PHYSCS 3150W	3
MATH 2300 <sup>1</sup>		3 PHYSCS 4100	3
General Education*		3 MATH 4100 <sup>1</sup>	3
Second Language/Alternative*		4-6 General Education*	3
		Second Language/Alternative	4-6
			<b>16-18</b>
		<b>15-17</b>	<b>16-18</b>

Third Year			
Fall	CR	Spring	CR
PHYSCS 4140		3 PHYSCS 4120 <sup>1</sup>	3
PHYSCS 4060 <sup>1</sup>		4 Physics Elective <sup>1</sup>	6
Math Elective <sup>1</sup>		3 Math Elective <sup>1</sup>	3
Second Language/Alternative*		3-4 General Education*	3
General Education		3	
			<b>15</b>
		<b>16-17</b>	<b>15</b>

Fourth Year			
Fall	CR	Spring	CR
PHYSCS 4800 <sup>1</sup>		3 PHYSCS Electives/Research <sup>1</sup>	6
PHYSCS Elective/Research <sup>1</sup>		6 Elective courses	9-10
General Education*		3	
Elective courses		3	
			<b>15-16</b>
		<b>15</b>	<b>15-16</b>

**Total Credits: 120-130**

<sup>1</sup> Course meets degree program requirements

\* Course meets University general education and/or campus graduation requirements