

# PHYSICS, BACHELOR OF SCIENCE

The physics curriculum is designed to serve the needs of students in the fields of engineering, medicine, and other sciences. The junior and senior courses are tailored for students who desire a concentration in physics for a bachelor of science degree in physical science and/or wish to pursue graduate study in areas such as physics, meteorology, and astronomy. Also, with obtaining proper licensure, physics graduates can teach at high schools.

To qualify for a bachelor of science degree in physical science, the student must take eight (8) hours in chemistry, nine (9) hours in computer and information science, at least twenty-one (21) hours in mathematics and statistics, and at least thirty-six (36) hours in physics.

## Curriculum

The matrix below is a sample plan for all coursework required for this program.

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
ENGL 1013	Composition I <sup>1</sup>	3
COMS 1011 & COMS 1013	Programming Foundations I Lab and Programming Foundations I	4
MATH 2914	Calculus I	4
PHSC 1001	Orientation to Physical Science	1
CHEM 2124 & CHEM 2120	General Chemistry I and General Chemistry I Lab	4
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
ENGL 1023	Composition II <sup>1</sup>	3
MATH 2924	Calculus II	4
PHYS 2114 & PHYS 2000	Calculus-Based Physics I and Physics Laboratory I	4
PHSC 1011	Orientation to Physical Science II	1
CHEM 2134 & CHEM 2130	General Chemistry II and General Chemistry II Lab	4
<b>Hours</b>		<b>16</b>
<b>Sophomore</b>		
<b>Fall</b>		
SS 1XXX	Social Science Courses <sup>1</sup>	3
PHYS 2124 & PHYS 2010	Calculus-Based Physics II and Physics Laboratory II	4
MATH 2934	Calculus III	4
COMS 2203	Programming Foundations II	3
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
USHG 1XXX	U.S. History and Government <sup>1</sup>	3
ELEG 2103	Electric Circuits I	3
PHYS 3213	Modern Physics	3
MATH 3243	Differential Equations I	3
BIOL XXXX	Biological Science with Laboratory <sup>1</sup>	4
<b>Hours</b>		<b>16</b>
<b>Junior</b>		
<b>Fall</b>		
FAH 1XXX	Fine Arts and Humanities Courses <sup>1</sup>	3
PHYS 3023 or PHYS 4013	Mechanics or Quantum Mechanics	3
ELEG 2113	Electric Circuits II	3

ELEG 2111	Electric Circuits Laboratory	1
PHYS 3133 or PHYS 4023	Theory of Electricity and Magnetism or Computational Physics	3
COMS 2323	Programming in Python	3
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
FAH 1XXX	Fine Arts and Humanities Courses <sup>1</sup>	3
PHYS 3003 or PHYS 4113	Optics or Advanced Physics Laboratory	3
PHYS 4213 or PHYS 4003	Advanced Topics in Physics and Astronomy (or an upper division Mathematics course) or Thermodynamics and Statistical Mechanics	3
STAT 3153	Applied Statistics	3
Electives <sup>2</sup>		2
<b>Hours</b>		<b>14</b>
<b>Senior</b>		
<b>Fall</b>		
SS 1XXX	Social Science Courses <sup>1</sup>	3
PHYS 3023 or PHYS 4013	Mechanics or Quantum Mechanics	3
PHYS 3133 or PHYS 4023	Theory of Electricity and Magnetism or Computational Physics	3
MATH 4003	Linear Algebra I	3
Elective (3000-4000 level) <sup>2</sup>		3
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
SFHS 1XXX	Social Sciences/Fine Arts/Humanities/Communication Courses <sup>1</sup>	3
PHYS 3003 or PHYS 4113	Optics or Advanced Physics Laboratory	3
PHYS 4213 or PHYS 4003	Advanced Topics in Physics and Astronomy (or an upper division Mathematics course) or Thermodynamics and Statistical Mechanics	3
PHYS 4951	Physics or Engineering Physics Capstone	1
Electives (3000-4000 level) <sup>2</sup>		3
<b>Hours</b>		<b>13</b>
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> See appropriate alternatives or substitutions in "General Education Requirements (<https://catalog.atu.edu/undergraduate/general-education-requirements/>)". A specific general education core course does not have to be taken in the semester listed, any other part of the general education core at any time is acceptable as well.

<sup>2</sup> Seven hours of electives must be from physical sciences, biology, engineering, computer science.

Excluding MATH 3003 Foundations of Advanced Mathematics, MATH 3033 Methods of Teaching Elementary Mathematics, and MATH 4113 History of Mathematics.

Must complete both the PHYS 4113 Advanced Physics Laboratory and 3 hours PHYS electives (PHYS course offered in alternating years).