# PHYSICS - BS, COMPUTATIONAL SCIENCE TRACK

## Program Requirements

### First Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>ENGL 104 or ENGL 103</td>
<td>Composition and Rhetoric or Introduction to Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MATH 171</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PHYS 101</td>
<td>Freshman Physics Orientation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PHYS 150</td>
<td>Introduction for Programming for Physics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>American history (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history</a>)</td>
<td>3</td>
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### Second Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>MATH 221</td>
<td>Several Variable Calculus</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>MATH 308</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHYS 207</td>
<td>Electricity and Magnetism for Engineering and Science</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PHYS 227</td>
<td>Electricity and Magnetism Laboratory for the Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHYS 221</td>
<td>Optics and Thermal Physics</td>
<td>3</td>
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### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 102</td>
<td>Observational Astronomy</td>
<td>1</td>
</tr>
</tbody>
</table>

### Third Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CSCE 222/</td>
<td>Discrete Structures for Computing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ECEN 222</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PHYS 302</td>
<td>Advanced Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHYS 304</td>
<td>Advanced Electricity and Magnetism I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHYS 332</td>
<td>Theoretical Methods for Physicists II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>POLS 206</td>
<td>American National Government</td>
<td>3</td>
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</tbody>
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### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 221</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 303</td>
<td>Advanced Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 305</td>
<td>or Advanced Electricity and Magnetism II</td>
<td></td>
</tr>
<tr>
<td>PHYS 327</td>
<td>Experimental Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 328</td>
<td>Experimental Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 412</td>
<td>Quantum Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>POLS 207</td>
<td>State and Local Government</td>
<td>3</td>
</tr>
</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CSCE 312</td>
<td>Computer Organization</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PHYS 408</td>
<td>Thermodynamics and Statistical Mechanics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Social and behavioral science (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences</a>)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General elective</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 401</td>
<td>Computational Physics</td>
<td>3</td>
</tr>
<tr>
<td>Creative arts (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts</a>)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Science or Technical elective</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>General elective</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

| Total Semester Credit Hours | 120 |

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1. A physics major must complete the foundation courses (PHYS 101, PHYS 150, ASTR 102, PHYS 206/PHYS 226, PHYS 207/PHYS 227, PHYS 221, PHYS 309, PHYS 331, MATH 171, MATH 172, MATH 221, MATH 308) with a grade of C or better and have a 2.0 cumulative GPA before taking non-foundation upper-level physics courses.
2. Any course in this category from the approved University Core Curriculum list of courses.
3. Any approved Communication course, except PERF 407.
4. PHYS 327 is an approved W course. PHYS 328 is an approved C course.
5. Electives should be chosen in consultation with the student’s advisor. A physics major must complete the foundation courses before taking non-foundation upper-level physics courses.
6. Three hours must be in the area of International and Cultural Diversity, and three hours must be in the area of Cultural Discourse. These may be in addition to other University Core Curriculum courses, or, if a course in this category satisfies another area of the Core, it can be used to meet both requirements. Electives may be selected from any 100-499 course not used elsewhere, except ENGL 103, MATH 100-148,
165-166, 365-366 (http://catalog.tamu.edu/undergraduate/coursedescriptions/math/); PHYS 201, PHYS 202.

6 To register for PHYS 401 a student must be able to program in a high level language.

7 Any upper-division course in geo/life/physical sciences, mathematics/statistics, or engineering (except 485/491).