<table>
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<tr>
<th>University Core and Graduation Requirements</th>
<th>Suggested Sequence of Courses</th>
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<tr>
<td><strong>University Core Requirements:</strong></td>
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<tr>
<td>Requirements</td>
<td>FRESHMAN YEAR</td>
</tr>
<tr>
<td>#Classes</td>
<td>Hours</td>
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<tr>
<td><strong>Religion Cornerstones</strong></td>
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<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
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<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
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<tr>
<td>The Eternal Family</td>
<td>1</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
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<tr>
<td>American Heritage</td>
<td>1-2</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
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<tr>
<td><strong>Skills</strong></td>
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<tr>
<td>First Year Writing</td>
<td>1</td>
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<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
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<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
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<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
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<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
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<tr>
<td>Civilization 1</td>
<td>1</td>
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<tr>
<td>Civilization 2</td>
<td>1</td>
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<tr>
<td>Arts</td>
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<td>Letters</td>
<td>1</td>
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<tr>
<td>Biological Science</td>
<td>1</td>
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<td>Physical Science</td>
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<tr>
<td>Social Science</td>
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<td><strong>Core Enrichment: Electives</strong></td>
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<td>Religion Electives</td>
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<td>Open Electives</td>
<td>Variable</td>
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<td><strong>Graduation Requirements:</strong></td>
<td></td>
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<tr>
<td>Minimum residence hours required</td>
<td>30.0</td>
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<tr>
<td>Minimum hours needed to graduate</td>
<td>120.0</td>
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</tbody>
</table>

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (7 hours overlap)*

**Note:** Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.
### REQUIREMENT 1
Complete 22 courses

**NOTE:** PHSCS 191 SHOULD BE TAKEN THE FIRST SEMESTER AS A FRESHMAN. PHSCS 291 SHOULD BE TAKEN THE FIRST SEMESTER AS A SOPHOMORE.

**PHSCS 291** - Introduction to Computer Programming 3.0
*MATH 113 - Calculus 2 4.0
PHSCS 121 - Introduction to Newtonian Mechanics 3.0
PHSCS 123 - Introduction to Waves, Optics, and Thermodynamics 3.0
PHSCS 191 - Introduction to Physics Careers and Research 1 0.5
PHSCS 220 - Introduction to Electricity and Magnetism 3.0
*MATH 322 - Modern Physics 3.0
PHSCS 225 - Introduction to Experimental Physics 2.0
PHSCS 230 - Computational Physics Lab 1 1.0
PHSCS 240 - Design, Fabrication, and Use of Scientific Apparatus 2.0
PHSCS 245 - Experiments in Contemporary Physics 2.0
PHSCS 291 - Introduction to Physics Careers and Research 2 0.5
PHSCS 318 - Introduction to Mathematical Physics 3.0
PHSCS 321 - Mechanics 3.0
PHSCS 330 - Computational Physics Lab 2 1.0
PHSCS 360 - Statistical and Thermal Physics 3.0
PHSCS 430 - Computational Physics Lab 3 1.0
PHSCS 441 - Electrostatics and Magnetism 3.0
PHSCS 442 - Electrodynamics 3.0
PHSCS 451 - Quantum Mechanics 3.0
PHSCS 452 - Applications of Quantum Mechanics 3.0
PHCS 471 - Principles of Optics 3.0

**REQUIREMENT 2**
Complete 1 option

**OPTION 2.1**
Complete 2 courses
- MATH 302 - Mathematics for Engineering 1 4.0
- MATH 303 - Mathematics for Engineering 2 4.0

**OPTION 2.2**
Complete 3 courses
- MATH 313 - (Not currently offered) 3.0
- PHSCS 314 - Calculus of Several Variables 3.0
- PHSCS 334 - Ordinary Differential Equations 3.0

**OPTION 2.3**
Complete 4 courses
- MATH 213 - Elementary Linear Algebra 2.0
- MATH 215 - Computational Linear Algebra 1.0
- MATH 314 - Calculus of Several Variables 3.0
- MATH 334 - Ordinary Differential Equations 3.0

**REQUIREMENT 3**
Complete 1 option

**SENIOR THESIS:**
Complete a senior thesis, including the following:

A. Choose a research mentor and group as early as possible, starting with information in Phscs 191 and 291, and discussion with faculty, your advisor and senior thesis coordinator. It is best to start as a freshman or sophomore. Interdisciplinary work in other departments or in internships is possible.

**OPTION 3.1**
Complete 2.0 hours from the following course(s)
- PHSCS 498R - Senior Thesis 3.0v
You may take up to 2 credit hours.

**REQUIREMENT 4**
Students are required to take the Physics "Major Field Test" the last semester before they graduate. The test is a standardized assessment of undergraduate physics written by ETS (Educational Testing Service). The ETS website contains a description of the exam and sample problems: http://www.ets.org/mft/about/content/physics. Results of the exam do not appear on the transcript or affect the GPA. Students should contact the Physics undergraduate secretary to make arrangements for taking the exam; typically it’s done in the Testing Center before mid-semester.

**Note 1:** Students planning careers in experimental, applied, or industrial physics should complete Stat 201.

**Note 2:** All students will benefit, through courses or individual study, by learning programming skills and numerical methods beyond what you are taught in C S 142 and our computational physics courses. Consider the following: C S courses, Math 410, Me En 373.

**Note 3:** Students planning graduate school in physics should learn complex analysis. Consider the following: Math 332, Phscs 601, 602.

### THE DISCIPLINE:

Over the centuries physicists and astronomers have studied the fundamental principles that govern the structure and dynamics of matter and energy in the physical world, from subatomic particles to the cosmos. Physicists also apply this understanding to the development of new technologies. For example, physicists invented the first lasers and semiconductor electronic devices.
5. Fundamental background for other physical sciences and engineering, in preparation for graduate study in these fields.
6. Physics fundamentals required by the biological science, medical, dental, nursing, and related programs.

For more information on careers in your major, see www.physics.byu.edu/undergraduate/careers.

MAP DISCLAIMER
While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

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