### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion Cornerstones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>2.0</td>
<td>SC ED 353*</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>PHSCS 416 or ENGL 316</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>PHIL 423*</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>3-4.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
<td>3.0</td>
<td>PHSCS 222*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

*These classes fill both university core and program requirements (13 hours overlap)*

### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

---

For students entering the degree program during the 2017-2018 curricular year.

This major is designed to prepare students to teach in public schools. In order to graduate with this major, students are required to complete Utah State Office of Education licensing requirements. To view these requirements go to [http://education.byu.edu/ess/licensing.html](http://education.byu.edu/ess/licensing.html) or contact Education Student Services, 350 MCKB, (801) 422-3426.

---

### Suggested Sequence of Courses

#### FRESHMAN YEAR

**1st Semester**
- First-year Writing: 3.0
- MATH 112 (FWSpSu): 4.0
- PHSCS 121 (FWSp): 3.0
- PHSC 191 (F): 0.5
- Religion Cornerstone course: 2.0
- General electives: 1.5
- **Total Hours**: 14.0

**2nd Semester**
- American Heritage: 3.0
- MATH 113 (FWSpSu): 4.0
- PHSCS 123 (FWSp): 3.0
- PHSCS 140 (WSp): 1.0
- Biological Science: 3.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 16.0

#### SOPHOMORE YEAR

**3rd Semester**
- MATH 302 (FW): 4.0
- PHYS 276 (FW): 4.0
- PHSCS 145 (FSu): 1.0
- PHSCS 220 (FWSu): 3.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 14.0

**4th Semester**
- MATH 303(FW): 4.0
- PHYS 376 (FWSpSu): 4.0
- PHSCS 310 or 311: 3.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 16.0

**5th Semester**
- MATH 251: 4.0
- PHYS 476R or 496R (FW): 1.0
- **Total Hours**: 15.0

**6th Semester**
- General Elective: 2.0
- **Total Hours**: 12.0

#### JUNIOR YEAR

**5th Semester**
- Physics Elective 1: 3.0
- IP & T 286 (FWSpSu): 1.0
- **Total Hours**: 16.0

**6th Semester**
- Civilization 1: 3.0
- ENGL 316: 3.0
- Religion Elective: 2.0
- **Total Hours**: 16.0

#### SENIOR YEAR

**7th Semester**
- Physics Elective 3: 3.0
- CPSE 402: 2.0
- **Total Hours**: 16.0

**8th Semester**
- Religion Elective: 2.0
- General Elective: 2.0
- **Total Hours**: 12.0

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.
**BS in Physics Teaching (694828)**

**2017-2018 Program Requirements (76.5 - 79.5 Credit Hours)**

---

**REQUIREMENT 1**
Complete 9 courses

**NOTE:** PHYSCS 191 SHOULDN'T BE TAKEN THE FIRST SEMESTER.

- PHYSCS 121 - Introduction to Newtonian Mechanics 3.0
- PHYSCS 123 - Introduction to Waves, Optics, and Thermodynamics 3.0
- PHYSCS 127 - Descriptive Astronomy 3.0
- PHYSCS 140 - Electronics Lab 1.0
- PHYSCS 145 - Experimental Methods in Physics 1.0
- PHYSCS 191 - Introduction to Physics Careers and Research 1 0.5
- *PHYSCS 222 - Modern Physics 3.0
- PHYSCS 240 - Design, Fabrication, and Use of Scientific Apparatus 2.0

---

**REQUIREMENT 2**
Complete 1 option

**OPTION 2.1**
Complete 3 courses

- *MATH 112 - Calculus 1 4.0
- MATH 113 - Calculus 2 4.0
- MATH 302 - Mathematics for Engineering 1 4.0

**OPTION 2.2**
Complete 4 courses

- *MATH 112 - Calculus 1 4.0
- MATH 113 - Calculus 2 4.0
- MATH 313 - Elementary Linear Algebra 3.0
- MATH 314 - Calculus of Several Variables 3.0

---

**REQUIREMENT 3**
Complete 1 course

- MATH 303 - Mathematics for Engineering 2 4.0
- MATH 334 - Ordinary Differential Equations 3.0

---

**REQUIREMENT 4**
Complete 1 course

- PHYSCS 310 - Physics By Inquiry: Mechanics 3.0
- PHYSCS 311 - Physics By Inquiry: Electricity 3.0

---

**REQUIREMENT 5**
Complete 9.0 hours from the following option(s)

**PHYSICS ELECTIVES:** COMPLETE AN ADDITIONAL 9 HOURS FROM THE FOLLOWING (ANY PHYSICS COURSE ALREADY TAKEN WILL NOT DOUBLE COUNT).

---

**OPTION 5.1**
Complete up to 3.0 hours from the following course(s)

**COMPLETE UP TO 3.0 HOURS FROM THE FOLLOWING. COURSES FROM REQUIREMENT 4 CAN'T BE DOUBLE COUNTED AS ELECTIVES.**

- PHYSCS 222 - Modern Physics 3.0
- PHYSCS 310 - Physics By Inquiry: Mechanics 3.0
- PHYSCS 311 - Physics By Inquiry: Electricity 3.0
- PHYSCS 313R - Special Topics in Physics 3.0

---

**OPTION 5.2**
Complete up to 9.0 hours from the following course(s)

**COMPLETE AT LEAST 6 HOURS FROM 300-, 400-, OR 500-LEVEL PHYSICS COURSES, NOT INCLUDING 310 OR 311 OR 399R (PHYSCS 321, 461, AND 471 ARE HIGHLY RECOMMENDED).**

- PHYSCS 313R - Special Topics in Physics 3.0
- PHYSCS 318 - Introduction to Mathematical Physics 3.0
- PHYSCS 321 - Mechanics 3.0
- PHYSCS 329 - Observational Astronomy 3.0
- PHYSCS 330 - Computational Physics Lab 2 1.0
- PHYSCS 360 - Statistical and Thermal Physics 3.0
- PHYSCS 391R - Seminar in Current Physics 1.0
- PHYSCS 416 - Writing in Physics 3.0
- PHYSCS 427 - Introduction to Astrophysics 3.0
- PHYSCS 428 - Introduction to Astrophysics 3.0
- PHYSCS 430 - Computational Physics Lab 3 1.0
- PHYSCS 441 - Electrostatics and Magnetism 3.0
- PHYSCS 442 - Electrodynamics 3.0
- PHYSCS 451 - Quantum Mechanics 3.0
- PHYSCS 452 - Applications of Quantum Mechanics 3.0
- PHYSCS 461 - Introduction to Acoustics 3.0
- PHYSCS 471 - Principles of Optics 3.0
- PHYSCS 477R - Secondary Minor Student Teaching 4.0
- PHYSCS 492R - Capstone Project in Applied Physics 2.0
- PHYSCS 497R - Research in Physics 3.0
- PHYSCS 498R - Senior Thesis 3.0
- PHYSCS 540 - Electrical Engineering Principles and Practices for Physic 2.0
- PHYSCS 561 - (Phscs-Me En) Fundamentals of Acoustics 3.0
- PHYSCS 571 - Lasers and Atoms 3.0
- PHYSCS 581 - Solid-State Physics 3.0
- PHYSCS 583 - Physics of Nanostructures, Surfaces, and Interfaces 3.0

---

**PHYSCS 585 - Thin-Film Physics 3.0**
**PHYSCS 586 - Transmission Electron Microscopy for Physical Science 3.0**
**PHYSCS 587 - Physics of Semiconductor Devices 3.0**
**PHYSCS 588 - Scanning Electron Microscopy (SEM) for Physical Science 3.0**
**PHYSCS 599R - Academic Internship 9.0v**

---

**REQUIREMENT 6**
Complete 2 options

**PROFESSIONAL EDUCATION COMPONENT:**

Licensure requirements: Contact Education Student Services, 350 MCKB, 422-3426, to schedule the final interview to clear your application for the secondary teaching license. You should be registered for your last semester at BYU prior to the scheduled appointment.

**OPTION 6.1**
Complete 9 courses

- CPSE 402 - Educating Students with Disabilities in Secondary Classroc 2.0
- IP&T 371 - Integrating K-12 Educational Technology 1
- IP&T 372 - Integrating K-12 Educational Technology 2 1.0
- IP&T 373 - Teaching in K-12 Online and Blended Learning Contexts 1.0
- PHY S 276 - Exploration of Teaching 4.0
- PHY S 377 - Teaching Methods and Instruction 3.0
- PHY S 378 - Practicum in Secondary Education 1.0
- SC ED 353 - Multicultural Education for Secondary Education 2.0
- SC ED 375 - Adolescent Development and Classroom Management 3.0

Note: FBI fingerprint and background clearance must be completed prior to enrollment in Phy S 276.

**OPTION 6.2**
Complete 12.0 hours from the following course(s)

- PHY S 476 - Secondary Student Teaching 12.0v
- PHY S 496 - Academic Internship: Secondary Education 12.0v

Student teachers/interns must complete three forms in their LiveText accounts (PIBS, CDS, FED) and attach their TWS to the LiveText account for their program. All four must be completed to be cleared for graduation.

---

**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 examples, physicists invented the first lasers and semiconductor electronic devices.
Physics and astronomy students learn to approach complex problems in science and technology from a broad background in mechanics, electricity and magnetism, statistical and thermal physics, quantum mechanics, relativity, and optics. The tools they develop at BYU include problem solving by mathematical and computational modeling, as well as experimental discovery and analysis. All students gain professional experience in a research, capstone, or internship project, usually in close association with faculty. Together these experience can provide excellent preparation for employment of for graduate studies in physics, other sciences, engineering, medicine, law, or business.

Most physicists and astronomers work in research and development in industrial, government, or university labs to solve new problems in technology and science. They also share the beauty discovered in our physical universe by teaching in high schools, colleges, and universities.

**CAREER OPPORTUNITIES:**

A degree in physics or physics-astronomy can provide:
1. Preparation for those who intend to enter industrial or governmental service as physicists or astronomers.
2. Education for those who intend to pursue graduate work in physics or astronomy.
3. Education in the subject matter of physics for prospective teachers of the physical sciences.
4. Undergraduate education for those who will pursue graduate work in the professions: business (e.g., an MBA), law, medicine, etc.
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, see 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.