## University Core and Graduation Requirements

### University Core Requirements:

#### Requirements

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstones</td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
</tr>
</tbody>
</table>

#### The Individual and Society

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Heritage</td>
<td>1-2</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3.0</td>
</tr>
</tbody>
</table>

#### Skills

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Writing</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Quantitative Reasoning

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Arts, Letters, and Sciences

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilization 1</td>
<td>1</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Core Enrichment: Electives

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
</tr>
<tr>
<td>Open Electives Variable</td>
<td>Variable</td>
</tr>
</tbody>
</table>

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (13 hours overlap)*

### Graduation Requirements:

<table>
<thead>
<tr>
<th>Classes</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum residence hours required</td>
<td>30.0</td>
</tr>
<tr>
<td>Minimum hours needed to graduate</td>
<td>120.0</td>
</tr>
</tbody>
</table>

### Suggested Sequence of Courses

#### FRESHMAN YEAR

**1st Semester**
- First-year Writing: 3.0
- MATH 112 (FWSpSu): 4.0
- PHSCS 121 (FWSp): 3.0
- PHSCS 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
- Religion Cornerstone course: 2.0
- **Total Hours**: 14.0

**4th Semester**
- MATH 303(FW): 4.0
- PHSCS 222 (FW): 3.0
- PHSCS 240 (FW): 2.0
- Social Science: 3.0
- Religion Cornerstone course: 2.0
- IP & T 371: 1.0
- **Total Hours**: 16.0

#### JUNIOR YEAR

**5th Semester**
- Physics Elective 1: 3.0
- IP&T 286 (FWSpSu): 1.0
- ENGL 316: 3.0
- Religion Elective: 2.0
- **Total Hours**: 16.0

**6th Semester**
- MATH 304: 4.0
- PHYS 377 (FW): 3.0
- PHYS 378 (FWSpSu): 1.0
- IP & T 372: 1.0
- **Total Hours**: 12.0

**Total Hours**: 17.0

#### SENIOR YEAR

**7th Semester**
- MATH 305: 4.0
- PHYS 376R or 496R (FW): 12.0
- **Total Hours**: 16.0

**8th Semester**
- MATH 306: 4.0
- **Total Hours**: 12.0

#### Notes:

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)
2018-2019 Program Requirements (77.5 - 79.5 Credit Hours)

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 3 CAN’T BE DOUBLE COUNTED AS ELECTIVES.

PHSCS 313R - Special Topics in Physics 3.0
PHSCS 318 - Introduction to Mathematical Physics 3.0
PHSCS 321 - Mechanics 3.0
PHSCS 329 - Observational Astronomy 3.0
PHSCS 330 - Computational Physics Lab 2 1.0
PHSCS 360 - Statistical and Thermal Physics 3.0
PHSCS 391R - Seminar in Current Physics 1.0
PHSCS 416 - Writing in Physics 3.0
PHSCS 427 - Introduction to Astrophysics 3.0
PHSCS 428 - Introduction to Astrophysics 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
PHSCS 461 - Introduction to Acoustics 3.0
PHSCS 471 - Principles of Optics 3.0
PHSCS 477R - Secondary Minor Student Teaching 4.0
PHSCS 492R - Capstone Project in Applied Physics 2.0
PHSCS 497R - Research in Physics 3.0
PHSCS 498R - Senior Thesis 3.0v
PHSCS 540 - Electrical Engineering Principles and Practices for Physicist 2.0
PHSCS 561L - [Phscs-Me En] Fundamentals of Acoustics 3.0

PHSCS 571 - Lasers and Atoms 3.0
PHSCS 581 - Solid-State Physics 3.0
PHSCS 583 - Physics of Nanostructures, Surfaces, and Interfaces 3.0
PHSCS 585 - Thin-Film Physics 3.0
PHSCS 586 - Transmission Electron Microscopy for Physical Science 3.0
PHSCS 587 - Physics of Semiconductor Devices 3.0
PHSCS 588 - Scanning Electron Microscopy (SEM) for Physical Science 3.0
PHSCS 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 Classroom 2.0
IP&T 371 - Integrating K-12 Educational Technology 1.0
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 3.0
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 example, 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 experiences can provide excellent preparation for employment or 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 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.

DEPARTMENT INFORMATION
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physics_office@byu.edu

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