Physical Science Composite Teaching - Secondary Education Licensure, B.S.

Program Description
The Dixie State University Physical Sciences department offers a variety of courses in Chemistry, Engineering, Environmental Science, Geology, Geography, and Physics that allow students to better understand and appreciate the natural world and our place in it. Many of these courses fulfill the General Education Physical Science requirement for all students. Coursework and academic degrees offered in the Physical Sciences also fulfills prerequisites and requirements for students planning to pursue careers in natural sciences, chemistry, physics, engineering, environmental sciences, earth sciences, and medical and health sciences.

Admission Requirements for Secondary Education Program
To be admitted to the Secondary Education Program and enroll in professional courses:

- USBE R277-504-3 A(3) “requires candidates to maintain a cumulative university GPA of 3.0, and receive a C or better in all education related courses and major required content courses”

and students must pass the appropriate PRAXIS II content area subject test(s). In addition, one of the following must be completed:

- Students with BA/BS degrees in progress must have completed at least 95% of major coursework and have approval of major academic content area department advisor
- Students with completed BA/BS or higher degrees must have their transcripts reviewed by content area department advisor

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCED 3720</td>
<td>Reading Writing Content Areas (ALPP)</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4100</td>
<td>Curriculum and Instruction</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4200</td>
<td>Secondary Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4600</td>
<td>Classroom Management (ALPP)</td>
<td>3</td>
</tr>
<tr>
<td>SCI 4700</td>
<td>Secondary Science Teaching Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCED 4900</td>
<td>Secondary Student Teaching</td>
<td>10</td>
</tr>
<tr>
<td>SCED 4989</td>
<td>Student Teaching Capstone</td>
<td>2</td>
</tr>
</tbody>
</table>

Program Curriculum
122 credits

DSU General Education Requirements
All DSU General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to DSU’s minimum General Education standards in American Institutions, English, and Mathematics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
<td>3-7</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>3-5</td>
</tr>
</tbody>
</table>
### American Institutions

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3-6</td>
</tr>
</tbody>
</table>

### Life Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3-10</td>
</tr>
</tbody>
</table>

### Physical Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3-5</td>
</tr>
</tbody>
</table>

### Laboratory Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-1</td>
</tr>
</tbody>
</table>

### Fine Arts

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Literature/Humanities

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Social & Behavioral Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Exploration

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3-5</td>
</tr>
</tbody>
</table>

### Secondary Education Program Requirements

Complete one of the following through General Education or elective credit:

- **HIST 1700** ([catalog.dixie.edu/search/?P=HIST%201700/](catalog.dixie.edu/search/?P=HIST%201700/)) American Civilization (AI) 3
- **or POLS 1100** ([catalog.dixie.edu/search/?P=POLS%201100/](catalog.dixie.edu/search/?P=POLS%201100/)) American Government (AI)

Complete one of the following through General Education or elective credit:

- **FSHD 1500** ([catalog.dixie.edu/search/?P=FSHD%201500/](catalog.dixie.edu/search/?P=FSHD%201500/)) Human Development Lifespan (SS, GC) 3
- **or PSY 1010** ([catalog.dixie.edu/search/?P=PSY%201010/](catalog.dixie.edu/search/?P=PSY%201010/)) General Psychology (SS, GC)
- **or PSY 1100** ([catalog.dixie.edu/search/?P=PSY%201100/](catalog.dixie.edu/search/?P=PSY%201100/)) Human Development Through Lifespan (SS, GC)

Complete the following program prerequisite courses:

- **EDUC 1010** ([catalog.dixie.edu/search/?P=EDUC%201010/](catalog.dixie.edu/search/?P=EDUC%201010/)) Foundations/Intro to Education 3
- **EDUC 2010** ([catalog.dixie.edu/search/?P=EDUC%202010/](catalog.dixie.edu/search/?P=EDUC%202010/)) Intro to Exceptional Learners 3
- **EDUC 2400** ([catalog.dixie.edu/search/?P=EDUC%202400/](catalog.dixie.edu/search/?P=EDUC%202400/)) Foundations Multicultural/ESL (SS, GC, ALCI) 3
- **EDUC 2500** ([catalog.dixie.edu/search/?P=EDUC%202500/](catalog.dixie.edu/search/?P=EDUC%202500/)) Instructional Technology in K-12 Classrooms 3
- **EDUC 3110** ([catalog.dixie.edu/search/?P=EDUC%203110/](catalog.dixie.edu/search/?P=EDUC%203110/)) Educational Psychology 3

### Physical Science Core Requirements

Complete the following Chemistry requirements:

- **CHEM 1210** ([catalog.dixie.edu/search/?P=CHEM%201210/](catalog.dixie.edu/search/?P=CHEM%201210/)) Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB) 5
- **CHEM 1215** ([catalog.dixie.edu/search/?P=CHEM%201215/](catalog.dixie.edu/search/?P=CHEM%201215/))

- **CHEM 1220** ([catalog.dixie.edu/search/?P=CHEM%201220/](catalog.dixie.edu/search/?P=CHEM%201220/)) Principles of Chemistry II and Principles of Chemistry II Lab 5
- **CHEM 1225** ([catalog.dixie.edu/search/?P=CHEM%201225/](catalog.dixie.edu/search/?P=CHEM%201225/))

Complete one of the following:

- **CHEM 2310** ([catalog.dixie.edu/search/?P=CHEM%202310/](catalog.dixie.edu/search/?P=CHEM%202310/)) Organic Chemistry I and Organic Chemistry I Lab 4-5
- **CHEM 2315** ([catalog.dixie.edu/search/?P=CHEM%202315/](catalog.dixie.edu/search/?P=CHEM%202315/))
- **or CHEM 3000** ([catalog.dixie.edu/search/?P=CHEM%203000/](catalog.dixie.edu/search/?P=CHEM%203000/)) Quantitative Chemical Analysis

Complete the following Geology requirements:

- **GEO 1110** ([catalog.dixie.edu/search/?P=GEO%201110/](catalog.dixie.edu/search/?P=GEO%201110/)) Physical Geology (PS) and Physical Geology Lab (LAB) 4
- **GEO 1115** ([catalog.dixie.edu/search/?P=GEO%201115/](catalog.dixie.edu/search/?P=GEO%201115/))
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 1220 &amp; GEO 1225</td>
<td>Historical Geology and Historical Geology Lab</td>
<td>4</td>
</tr>
<tr>
<td>GEO 3060</td>
<td>Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1040 &amp; PHYS 1045</td>
<td>Elementary Astronomy (PS) and Elementary Astronomy Lab (LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2210 &amp; PHYS 2215</td>
<td>Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 2220 &amp; PHYS 2225</td>
<td>Physics/Scientists Engineers II and Physics/Scientists Engineers II Lab</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 3710</td>
<td>Intermediate Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 1610 &amp; BIOL 1615</td>
<td>Principles of Biology I (LS) and Principles of Biology I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>MATH 1210 &amp; MATH 1220</td>
<td>Calculus I (MA) and Calculus II (MA)</td>
<td>4</td>
</tr>
<tr>
<td>SCI 2600</td>
<td>Lab Safety for Teachers</td>
<td>1</td>
</tr>
<tr>
<td>SCI 4800R</td>
<td>Independent Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 3510 or PHYS 3400</td>
<td>Biochemistry I or Classical Mechanics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:**

Students who complete BIOL 3040 (General Ecology) and BIOL 3045 (General Ecology Lab) will also meet the requirements for an Earth Science endorsement.

**Graduation Requirements**

1. Complete a minimum of 122 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at DSU for institutional residency.
4. Cumulative university GPA 3.0 or higher.
5. USBE R277-504-3 A(3) “requires candidates to maintain a cumulative university GPA of 3.0, and receive a C or better in all education related courses and major required content courses”
6. 3.0 GPA in program prerequisite and professional courses.
# Graduation Plan

## 1st Year

### Fall Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1210 &amp; CHEM 1215</td>
<td>Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 1010</td>
<td>Introduction to Writing (EN)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1210</td>
<td>Calculus I (MA)</td>
<td>4</td>
</tr>
<tr>
<td>First Year Recommended Elective</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

### Hours: 14

### Spring Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI 2600</td>
<td>Lab Safety for Teachers</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1220 &amp; CHEM 1225</td>
<td>Principles of Chemistry II and Principles of Chemistry II Lab</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 2010</td>
<td>Interim Writing Selected Topics: (EN)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1220</td>
<td>Calculus II (MA)</td>
<td>4</td>
</tr>
<tr>
<td>General Education</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Hours: 16

## 2nd Year

### Fall Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1610 &amp; BIOL 1615</td>
<td>Principles of Biology I (LS) and Principles of Biology I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>GEO 1110 &amp; GEO 1115</td>
<td>Physical Geology (PS) and Physical Geology Lab (LAB)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 1040 &amp; PHYS 1045</td>
<td>Elementary Astronomy (PS) and Elementary Astronomy Lab (LAB)</td>
<td>4</td>
</tr>
</tbody>
</table>

### Hours: 16
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name and Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2210</td>
<td>Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 2215</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>GEO 1220</td>
<td>Historical Geology and Historical Geology Lab</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2220</td>
<td>Physics/Scientists Engineers II and Physics/Scientists Engineers II Lab</td>
<td>5</td>
</tr>
<tr>
<td>HIST 1700</td>
<td>American Civilization (AI) or American Government (AI)</td>
<td>3</td>
</tr>
<tr>
<td>FSHD 1500</td>
<td>Human Development Lifespan (SS, GC) or General Psychology (SS, GC) or Human Development Through Lifespan (SS, GC)</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 3000</td>
<td>Quantitative Chemical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3400</td>
<td>Classical Mechanics or Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 1010</td>
<td>Foundations/Intro to Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2500</td>
<td>Instructional Technology in K-12 Classrooms</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Spring Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name and Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2210</td>
<td>Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 2215</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>GEO 1220</td>
<td>Historical Geology and Historical Geology Lab</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2220</td>
<td>Physics/Scientists Engineers II and Physics/Scientists Engineers II Lab</td>
<td>5</td>
</tr>
<tr>
<td>HIST 1700</td>
<td>American Civilization (AI) or American Government (AI)</td>
<td>3</td>
</tr>
<tr>
<td>FSHD 1500</td>
<td>Human Development Lifespan (SS, GC) or General Psychology (SS, GC) or Human Development Through Lifespan (SS, GC)</td>
<td>3</td>
</tr>
</tbody>
</table>

**3rd Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name and Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 3000</td>
<td>Quantitative Chemical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3400</td>
<td>Classical Mechanics or Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 1010</td>
<td>Foundations/Intro to Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2500</td>
<td>Instructional Technology in K-12 Classrooms</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
**Spring Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 3710</td>
<td>Intermediate Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>GEO 3060</td>
<td>Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2010</td>
<td>Intro to Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2400</td>
<td>Foundations Multicultural/ESL (SS, GC, ALCI) (GLOCUP)</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3110</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SCI 4800R</td>
<td>Independent Research</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**4th Year**

**Fall Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI 4700</td>
<td>Secondary Science Teaching Methods</td>
<td>3</td>
</tr>
<tr>
<td>SCED 3720</td>
<td>Reading Writing Content Areas (ALPP)</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4100</td>
<td>Curriculum and Instruction</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4200</td>
<td>Secondary Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SCED 4600</td>
<td>Classroom Management (ALPP)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

**Spring Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCED 4900</td>
<td>Secondary Student Teaching</td>
<td>10</td>
</tr>
<tr>
<td>SCED 4989</td>
<td>Student Teaching Capstone</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Physical Science Program Learning Outcomes**

At the successful conclusion of this program, students will be able to:

1. Assess and critique local and global issues based on acquired knowledge in science to formulate solutions to problems.
2. Integrate knowledge of basic fundamental laws, concepts, and theories to apply them to everyday life.
3. Consider the process of science — how scientific knowledge is generated and validated — to make independent, empirical inquiries about the natural world.
4. Evaluate, interpret, and communicate data in the form of tables, graphs, and charts in oral and or written form.
5. Create individual lesson plans and activities reflecting the curriculum and informed by best practices in pedagogy and technology.