BS in BIOLOGICAL SCIENCE EDUCATION (282024) MAP Sheet
Department of Biology
For students entering the degree program during the 2014–2015 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, 120 MCKB, (801) 422-3426.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Doctrinal Foundation</strong></td>
<td></td>
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<tr>
<td>Book of Mormon</td>
<td>2</td>
<td>4.0</td>
<td>Rel A 121 and 122</td>
</tr>
<tr>
<td>New Testament</td>
<td>1</td>
<td>2.0</td>
<td>Rel A 211 or 212</td>
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<tr>
<td>Doctrine and Covenants</td>
<td>1</td>
<td>2.0</td>
<td>Rel C 324 or 325</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
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<tr>
<td>Citizenship</td>
<td></td>
<td></td>
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<tr>
<td>American Heritage</td>
<td>1–2</td>
<td>3–6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global &amp; Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>Sc Ed 353*</td>
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<tr>
<td><strong>Skills</strong></td>
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<tr>
<td>Effective Communication</td>
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<tr>
<td>First-Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Adv Written &amp; Oral Communication</td>
<td>1</td>
<td>3.0</td>
<td>Engl 316 recommended</td>
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<tr>
<td>Quantitative Reasoning</td>
<td>0–1</td>
<td>0–3.0</td>
<td>from approved list</td>
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<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>3.0</td>
<td>Stat 121*</td>
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<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
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<tr>
<td>Civilization 1 and 2</td>
<td>2</td>
<td>6.0</td>
<td>from approved list</td>
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<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Scientific Principles &amp; Reasoning</td>
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<tr>
<td>Biological Science</td>
<td>1</td>
<td>4.0</td>
<td>Bio 130*</td>
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<tr>
<td>Physical Science</td>
<td>2</td>
<td>7.0</td>
<td>Chem 105*, Phscs 105*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
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<tr>
<td><strong>Core Enrichment: Electives</strong></td>
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<tr>
<td>Religion Electives</td>
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<td>6.0</td>
<td>from approved list</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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**GRADUATION REQUIREMENTS:**

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

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<tr>
<th>PROGRAM REQUIREMENTS (83 total hours, including licensure hours)</th>
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Grades below C- in professional education courses or content courses will not be accepted in the teaching major or teaching minor. Teacher candidates must have a cumulative 2.85 GPA in teaching major or teaching minor courses to qualify for student teaching.

**Complete the following:**

- Bio 130* Biology
- Bio 220A Biological Diversity: Animals
- Bio 220B Biological Diversity: Plants
- Bio 350 Ecology
- Bio 420 Evolutionary Biology
- Bio 421 Evolutionary Biology Laboratory
- MMBio 240 Molecular Biology
- PWS 340 Genetics

Note: Bio 420, 421 must be taken at BYU.

**Complete the following:**

- Bio 235 Field Botany
- Bio 370 Bioethics
- Bio 441 Entomology
- Chem 105* General College Chemistry
- Chem 285 Introductory Bio-organic Chemistry
- Geol 101 Introduction to Geology
- Phscs 105* General Physics 1
- Stat 121* Principles of Statistics

Complete one course from the following:

- Bio 470 History & Philosophy of Biology
- Phil 423 History & Philosophy of Science

**Licensure Requirements:**

Contact the Education Advisement Center, 120 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.

**Complete the following:**

- Bio 276 Exploration of Teaching in Biological Sci.
- Bio 377 Teaching Methods / Instruction in Biology
- Bio 378 Practicum in Biology Teaching
- Bio 379 Classroom Management & Lab Safety
- CPSE 402 Educating Students with Disabilities
- IP&T 286 Instructional Technology in Teaching
- Sc Ed 350 Adolescent Developmt. in Educ. Context
- Sc Ed 353* Multicultural Education

**Note 1:** FBI fingerprint and background clearance must be completed before enrollment in Bio 276.

**Note 2:** Bio 377, 378, and 379 should be taken concurrently in the semester prior to taking Sc Ed 476R.

**Note 3:** Most states require the Biology Praxis Exam for employment in High School and the Middle Level Praxis Exam for teaching in grades 6-8.

Complete 12 hours from the following:

- Sc Ed 476R Secondary Student-Teaching

**Recommended Courses**

- Geol 103, 112.
- Math 119
- PWS 282, 283.
Suggested Sequence of Courses:

### FRESHMAN YEAR

**1st Semester**
- Bio 130 (FW) (Biological Science) 4.0
- or A Htg 100 (3.0)
- Quantitative Reasoning (if needed) 0–3.0
- Chem 105 4.0
- Rel A 121 (FWSpSu) 2.0

**Total Hours** 13–16.0

**2nd Semester**
- A Htg 100 (FWSpSu) 3.0
- Bio 220A (FW) 4.0
- Geol 101 (FWSpu) 3.0
- Stat A 122 (FWSpu) 3.0
- Rel A 122 (FWSpu) 2.0

**Total Hours** 15.0

### SPRING TERM

- Bio 235 (FSp) 3.0
- MMBio 240 (FWSpu) 3.0

**Total Hours** 6.0

### SOPHOMORE YEAR

**3rd Semester**
- Bio 220B 4.0
- Bio 276 (F) 3.0
- CPSE 402* (1st or 2nd block) 2.0
- Phsce 105 (FWSpu) (Physical Science) 3.0
- Civiliztion 1 elective 3.0
- Rel A 211 or 212 (FWSpu) 2.0

**Total Hours** 17.0

**4th Semester**
- Bio 350 (FWSp) 3.0
- Chem 285 4.0
- Sc Ed 350 (FW, 1st or 2nd block) 2.0
- Sc Ed 353* (FWSpu, 1st or 2nd block) 2.0
- Rel C 324 or 325 (FWSpu) 2.0
- General electives 2.0

**Total Hours** 15.0

### JUNIOR YEAR

**5th Semester**
- Bio 370 2.0
- Bio 380 or PDBio 4.0
- Bio 441 (FSu) 3.0
- Civilization 2 elective 3.0
- General electives 3.0

**Total Hours** 15.0

**6th Semester**
- Civiliztion 2 elective 3.0
- Adv. Written & Oral Communication 3.0
- Bio 420, 421 (FW) 3.0
- Bio 470 (FW) 3.0
- Arts or Letters elective 3.0
- Social Sciences elective 3.0
- Religion elective (FWSpSu) 2.0

**Total Hours** 17.0

**7th Semester**
- Sc Ed 380 2.0
- Bio 377, 378, 379 5.0
- Global & Cultural Awareness elective 3.0
- Arts or Letters elective 3.0
- Religion elective 2.0

**Total Hours** 15.0

**8th Semester**
- Bio 476 12.0

**Total Hours** 12.0

### THE DISCIPLINE:

Biology teachers can help students in public schools catch a vision of the exciting future in biology. Students study both the discipline of biology and the techniques of science education. Teaching junior and senior high school students about the broad areas of biology requires an understanding of botany, microbiology and zoology. Biology teachers must have exposure and limited expertise in chemistry, physics, mathematics and geology. Biology teachers also must understand how to plan and carry out lab investigations, field trips and multi disciplinary activities that bring junior and senior high school students into the study of biology. Their role is to help students see the inter-relationships among science, society, and technology and the resulting bioethical concerns.

### STUDENT TEACHING AND INTERNSHIPS:

Student teaching is normally completed during the senior year and must occur within the state of Utah. Some half-salary teaching internships are available annually. (Some schools offer half-year internships, but most require a full year.) The internship experience counts for student-teaching credit. Applications for winter student teaching are due Sept. 15.

### HONORARY SOCIETIES AND CLUBS:

The Science Teachers Club develops professionalism and promotes fellowship. Membership is open to all science teaching majors. Phi Delta Kappa Honorary Society is available for students with a high GPA.

### APPLICATION TO PROGRAM:

Admission to teaching program is by application. All candidates must be declared Biological Science Education majors prior to application. The following classes must be taken: Bio 130, Bio 220A and B, or Chem 105.

### FINANCING:

Many undergraduate students work about 20 hours per week. Upper-class students may work as assistants in the science education teaching and research programs. These assistantships are only available after students have successfully completed Secondary Education 276R (offered during the fall semester of the junior year).

### CAREERS:

This major prepares students specifically for teaching life sciences in public schools. At the high school level this could include general biology, anatomy, physiology, botany, zoology, AP biology and many other life science subjects. At the junior high school level this could include life science and general science.

Many teachers have summer jobs in fields related to biology teaching. This includes work with the Forest Service, Wildlife Division, Park Service, city summer recreation programs, etc.

### FACILITIES:

Science education facilities at BYU include a science education laboratory and teaching area. Other facilities include microteaching laboratories with complete videotaping equipment and a learning resource center housing a variety of science education materials.

*Note: CPSE 402, Sc Ed 350, 353 may be taken in any sequence.*

**Note:** This degree program requires a minimum of 135 hours for graduation. Students are encouraged to complete an average of 17–18 credit hours each semester or 34–35 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.