SCIENCE TEACHING, BIOLOGY EMPHASIS COMPREHENSIVE MAJOR

Teaching (Code 241-004)

University Requirements

GRADUATION REQUIREMENTS FOR BACALAUREATE DEGREE

Credit Requirements

Minimum total for graduation 1
120
Upper division credits (courses numbered 300 and higher)
39
Liberal Education Core (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header1)
36
Academic Concentrations (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header16)
Grade Point Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header14) 2
Total 2.00 average
Resident 2.00 average
Major 2.00 average
Minor 2.00 average
Certificate 2.00 average

University Residency Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header15)
Minimum total
30
Senior year
23
Major, Standard, upper division in residence
12
Major, Comprehensive, upper division in residence
21
Certificate 25 percent of credits

Procedures Required for Graduation

Obtain admission to the degree program and/or the College offering it.
Apply for graduation on CampS.

1 Certain programs exceed this minimum.
2 See special requirements in each College.

Applicability of Credits Toward Graduation

Junior College or Two-Year College Credits. A maximum of 72 semester credits earned in a junior college or two-year college will be accepted as degree credits at UW-Eau Claire.

Extension Credits. Credits earned in credit outreach courses offered by UW-Eau Claire are treated as resident credits. Credits earned in extension courses offered by other units of the University of Wisconsin System are treated as transfer credits. All other (non-UW) extension and correspondence credits are normally limited to one-fourth of the total required for graduation from any curriculum.

WTCS Credits. A maximum of 72 semester credits earned in college parallel programs at Madison Area Technical College, Milwaukee Area Technical College, Nicolet Area Technical College, or Chippewa Valley Technical College may be accepted as degree credits at UW-Eau Claire. A set number of general education courses will be accepted from other technical schools. Occupational and technical courses may also be considered for transfer if the quality and content of the course work from the technical college is judged to be comparable to course work at UW-Eau Claire. Refer to the Transfer Credit Wizard (https://my.uwec.edu/psp/PUBLIC/EMPLOYEE/HRMS/c/EAU_SS_CUSTOM.EAU_TRNCRDWZ.GBL) or contact the UW-Eau Claire Admissions Office for information about the current transfer policy.

USAFI Credit. UW-Eau Claire will accept up to 32 semester credits for work done through the United States Armed Forces Institute, under the provision for non-UW correspondence credit (see Extension Credits above).

Activity Credit (band, chorus, drama, KINS 100-184 courses) Students may count toward graduation no more than one credit of KINS 110-184 courses. Students may count toward graduation no more than four credits earned in any single activity course and no more than 12 credits resulting from any combination of activity courses (excluding KINS 110-184 courses).

Other Restricted Credits. For other University restrictions, see the following: Cooperative Education; Credit by Examination; Satisfactory/Unsatisfactory Registration; Transfer of Credits. College or departmental restrictions may also be placed on Independent Study (399-499 courses), Directed Study (395-495), and other types of credits.

APPLICABILITY OF CREDITS TOWARD GRADUATION

Credit Restrictions

Satisfactory/Unsatisfactory
Total degree credit maximum 12
Major, Standard maximum 1 course
Major, Comprehensive maximum 2 courses
Minor maximum 1 course

Credit by Examination
Total degree credit maximum ¼ of total
Major or minor maximum ½ of total

Two-Year College Credits
Total degree credit maximum 72 credits

Activity credit (band, chorus, drama, KINS 100-184)
Total KINS 100-184 maximum 1 credit
Total Band, chorus, drama maximum 12 credits
Single course band, chorus, drama maximum 4 credits

Extension credits
UW-System no maximum
Other extension/ correspondence maximum ¼ of total

USAFI
USAFI maximum 32 credits
Liberal Education Core
The University of Wisconsin-Eau Claire measures learning outcomes to ensure that its graduates have achieved a liberal education and prepared themselves to contribute to a complex society. Upon graduation, each undergraduate will have met the five learning goals of our liberal education core and the 12 learning outcomes they comprise.

LIBERAL EDUCATION CORE REQUIREMENTS

Knowledge Goal

Knowledge Outcome 1 (K1): Natural Sciences (http://catalog.uwec.edu/undergraduate/attribute-k1/)
Two (2) learning experiences

Knowledge Outcome 2 (K2): Social Sciences (http://catalog.uwec.edu/undergraduate/attribute-k2/)
Two (2) learning experiences

Knowledge Outcome 3 (K3): Humanities (http://catalog.uwec.edu/undergraduate/attribute-k3/)
Two (2) learning experiences

Knowledge Outcome 4 (K4): Fine Arts (http://catalog.uwec.edu/undergraduate/attribute-k4/)
One (1) learning experience

Skills Goal

Skills Outcome 1 (S1): Written and Oral Communication (http://catalog.uwec.edu/undergraduate/attribute-s1/)
Two (2) learning experiences

Skills Outcome 2 (S2): Mathematics (http://catalog.uwec.edu/undergraduate/attribute-s2/)
One (1) learning experience

Skills Outcome 3 (S3): Creativity (http://catalog.uwec.edu/undergraduate/attribute-s3/)
One (1) learning experience

Responsibility Goal

Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity (http://catalog.uwec.edu/undergraduate/attribute-r1/)
Two (2) learning experiences

Responsibility Outcome 2 (R2): Global Perspectives (http://catalog.uwec.edu/undergraduate/attribute-r2/)
One (1) learning experience

Responsibility Outcome 3 (R3): Civic and Environmental Issues (http://catalog.uwec.edu/undergraduate/attribute-r3/)
One (1) learning experience

Integration Goal

Integration Outcome 1 (I1): Integration (http://catalog.uwec.edu/undergraduate/attribute-i1/)
Two (2) learning experiences

Service-Learning Goal

Service-Learning (http://catalog.uwec.edu/undergraduate/attribute-sl/#header13)
30 hours

College Degree Requirements

University Requirements in Teacher Education in the College of Education and Human Sciences

College Requirements for Teacher Education
All candidates for teacher education baccalaureate degrees must also meet the following:
1. Liberal Education requirements in the College of Education and Human Sciences.
2. Grade point requirements:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>2.75 average</td>
</tr>
<tr>
<td>Total</td>
<td>2.75 average</td>
</tr>
<tr>
<td>Major</td>
<td>2.75 average</td>
</tr>
<tr>
<td>Minor (for certification only)</td>
<td>2.75 average</td>
</tr>
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</table>

3. Residency requirements:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Total</td>
<td>30 credits</td>
</tr>
<tr>
<td>Senior Year</td>
<td>23 credits</td>
</tr>
<tr>
<td>Major, in upper division courses</td>
<td>12 credits</td>
</tr>
<tr>
<td>Comprehensive Major, in upper division courses</td>
<td>21 credits</td>
</tr>
</tbody>
</table>

4. Criteria and requirements for Professional Programs and for Admission to the Professional Semester.
5. Specific requirements of programs offered in the College of Education and Human Sciences. (See the departmental sections of this catalog.)

Grades 4-12 and Grades K-12
Liberal Education Requirements are listed in the table below

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2 (Social Sciences)</td>
<td>PSYC 260 Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>AND another learning experience</td>
<td></td>
</tr>
<tr>
<td>S3 (Creativity)</td>
<td>ES 497 Field Experience Seminar (included in major)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ES 385 Social Foundations: Human Relations (included in major)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>AND another learning experience</td>
<td></td>
</tr>
<tr>
<td>I1 (Integration)</td>
<td>ES 497 Field Experience Seminar (included in major)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>AND another learning experience</td>
<td></td>
</tr>
</tbody>
</table>

Integration Outcome 1 (I1): Integration (http://catalog.uwec.edu/undergraduate/attribute-i1/)
Two (2) learning experiences
Teaching Licensure Requirements - Grades 4-12

Program Options B and C

These program options are organized around content majors and education courses and are designed to prepare teachers for 4-12 teaching or for K-12 teaching in selected areas. Each program requires the student to complete:

1. a comprehensive major (at least 60 credits) or a standard major (at least 36 credits) plus one of the following: another standard major (at least 36 credits), or a minor (at least 24 credits), or a certificate (12-18 credits). Students choosing another major or minor may choose from the approved majors and minors listed in the table below. The approved majors and minors lead to additional certification.

2. a professional sequence consisting of teaching methods and related courses.

Students are assigned an education academic advisor and a faculty advisor teaching in selected areas. Each program requires the student to complete:

- a comprehensive major (at least 60 credits) or a standard major (at least 36 credits) plus one of the following: another standard major (at least 36 credits), or a minor (at least 24 credits), or a certificate (12-18 credits). Students choosing another major or minor may choose from the approved majors and minors listed in the table below. The approved majors and minors lead to additional certification.
- a professional sequence consisting of teaching methods and related courses.

Students are assigned an education academic advisor and a faculty advisor through the content major department.

Option C: Grades K-12

Grades K-12 Licensure

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES 212</td>
<td>Exploring Schooling K-12</td>
<td>2</td>
</tr>
<tr>
<td>ES 312</td>
<td>General Methods of Teaching</td>
<td>2</td>
</tr>
<tr>
<td>ES 317</td>
<td>Middle Level Methods and Curriculum</td>
<td>2</td>
</tr>
<tr>
<td>ES 318</td>
<td>Teacher Assisting</td>
<td>1</td>
</tr>
<tr>
<td>ES 328</td>
<td>Content Area Reading and Study Strategies</td>
<td>2</td>
</tr>
<tr>
<td>ES 385</td>
<td>Social Foundations: Human Relations</td>
<td>3</td>
</tr>
<tr>
<td>ES 490</td>
<td>Historical, Legal, and Philosophical Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>ES 497</td>
<td>Field Experience Seminar</td>
<td>2</td>
</tr>
<tr>
<td>SPED 300</td>
<td>Inclusive Practices for Secondary Educators</td>
<td>2</td>
</tr>
</tbody>
</table>

Prescribed special methods course(s) (see approved majors and minors below)

Student Teaching Courses from list below:

- ES 441 | Student Teaching in Elementary Education | 5       |
- ES 445 | Student Teaching in Middle Level Education | 5       |
- ES 470 | Internship Teaching in Elementary Education | 5-10  |
- ES 440 | Internship Teaching in Elementary Education | 5-10  |
- ES 446 | Internship Teaching in Middle Level Education | 5-10  |
- ES 475 | Internship Teaching in Secondary Education | 5-10  |

NOTE 1: SPED 300 (not required of Kinesiology or Music majors).

NOTE 2: ES 441 is not required for Foreign Language majors and minors in the student teaching semester as an earlier elementary level field placement (required by DPI) occurs in ES 437.

NOTE 3: Music Education majors take MUED 318 instead of ES 318 and MUED 488 instead of ES 441 and one of ES 445 or ES 470, or ES 440, or ES 446, or ES 475.

Approved Majors and Minors for Option C

<table>
<thead>
<tr>
<th>Comprehensive Code</th>
<th>Prescribed Methods Course</th>
<th>Additional Requirement</th>
<th>Praxis II or ACTFL Content Test Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music, General</td>
<td>060-062</td>
<td>ES 211, MUED 300,</td>
<td>See department for ETS exam number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ES 310, MUED 318,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MUED 411</td>
<td></td>
</tr>
<tr>
<td>Music, Choral</td>
<td>060-065</td>
<td>ES 211, MUED 300,</td>
<td>See department for ETS exam number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ES 310, MUED 318,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MUED 410</td>
<td></td>
</tr>
<tr>
<td>Kinesiology</td>
<td>991-065</td>
<td>KINS 290</td>
<td>See department for ETS exam number</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

Majors

<table>
<thead>
<tr>
<th>Code</th>
<th>Prescribed Methods Course</th>
<th>Additional Requirement</th>
<th>Praxis II ACTFL Content Test Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td>260-203</td>
<td>ES 366 (F) and ES 437 (Sp)</td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WPT and OPI or OPIc</td>
</tr>
<tr>
<td>German</td>
<td>280-204</td>
<td>ES 366 (F) and ES 437 (Sp)</td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WPT and OPI or OPIc</td>
</tr>
<tr>
<td>Spanish</td>
<td>320-203</td>
<td>ES 366 (F) and ES 437 (Sp)</td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study abroad in language</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WPT and OPI or OPIc</td>
</tr>
</tbody>
</table>

Minors

<table>
<thead>
<tr>
<th>Code</th>
<th>Prescribed Methods Course</th>
<th>Additional Requirement</th>
<th>Praxis II ACTFL Content Test Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Physical Education</td>
<td>991-459</td>
<td>Only with KINS major</td>
<td>No add'l exam</td>
</tr>
<tr>
<td>French</td>
<td>260-406</td>
<td>ES 366 (F) and ES 437 (Sp)</td>
<td>Only with F Lg major</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WPT and OPI or OPIc</td>
</tr>
<tr>
<td>Spanish</td>
<td>320-407</td>
<td>ES 366 (F) and ES 437 (Sp)</td>
<td>Only with F Lg major</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WPT and OPI or OPIc</td>
</tr>
<tr>
<td>TESOL</td>
<td>550-410</td>
<td>ES 405 (F)</td>
<td>Only with F Lg major</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See department for ETS exam number</td>
</tr>
</tbody>
</table>

NOTE: Students completing a K-12 comprehensive major or standard major may complete an additional major or minor with licensure at the K-12 level from the list under Option C above.

Science Teaching, Biology Emphasis Comprehensive Major
Admission Requirements

Admission to Education Programs

Admission to the Major

Formal application to the professional education program must be made by October 1 for spring admission or March 1 for fall admission. In order to submit an application to an Education Program, students must satisfy all of the requirements listed below:

1. Approval by the appropriate department in the College of Education and Human Sciences. See Department of Education for Equity and Justice (http://catalog.uwec.edu/undergraduate/education-human-sciences/education-for-equity-justice/) and Special Education and Inclusive Practices (http://catalog.uwec.edu/undergraduate/education-human-sciences/special-education-inclusive-practices/sections of this catalog for criteria to be considered in making these recommendations.
2. Pre-education status.
3. Students must have attained at least Sophomore Status
4. Minimum total GPA of 2.5. Admission is competitive; thus the minimum GPA does not assure admission to a professional program in education.
5. Met the University Writing Requirement (complete WRIT 114, WRIT 116, WRIT 118, or WRIT 120 or the equivalent earning a C or better)
6. Met the University Mathematics requirements (complete one college-level math course earning C or better)
7. Good academic standing.
8. Complete an introductory education course with a field placement (eg SPED 205, SEIP 208, ES 203, ES 212 or the equivalent) with a grade of B- or better.

Application Procedure

Formal application to the professional program must be made. The number of students admitted to a program is limited by resources available. Not everyone who applies can be guaranteed admission. See the appropriate section of this catalog for criteria upon which the departmental recommendation will be based. Note that minimum criteria for a department may exceed the minimum criteria listed above.

Students who do not meet all the criteria listed above or who do not receive a favorable departmental recommendation may reapply during a later application period.

Special or Transfer Students

Special students and transfer students who desire to be admitted to the Teacher Education Program in the College of Education and Human Sciences should inform the Admissions Office upon application for admission to the University. They should indicate their area of interest. These students are expected to have a minimum GPA of 2.5.

Retention in Professional Education Programs

Students who are in good standing in the University but are having difficulty meeting the College of Education and Human Sciences criteria for professional education programs are strongly advised to seek the counsel of their advisor and/or the Associate Dean of the College of Education and Human Sciences regarding their continuation in the program. A student may continue in the program while in good standing or after receiving an Academic Warning (See Academic Standing and Progress (http://catalog.uwec.edu/undergraduate/academic-policies-regulations/academic-standing-forgiveness/)). However, if placed on probation or if readmitted after a first suspension, the student may continue in the program only upon recommendation of the department concerned (Department of Education for Equity and Justice or Special Education and Inclusive Practices). After a second suspension, the student may not continue in the professional education program.

Admission to the Teaching Professional Semester (Student Teaching)

Admission to the Professional Education Semester

The “professional semester” is defined as the senior semester in which a student is enrolled in the field experience of student teaching or internship.

Filing Applications

Students who plan to enter the professional semester during the fall semester of the next academic year must file an application available at an education “professional semester” meeting held each fall. Students who plan to enter the professional semester during the spring semester of the next academic year must file an application at an education “professional semester” meeting held in spring. Dates for these meetings will be advertised widely and posted across campus.

Students are encouraged to submit their applications as soon as possible after the meeting. Considerable time is required to process each application—that is, to determine eligibility, to make arrangements with schools for an appropriate field experience assignment, and to allow for introductions, orientations, and, in some cases, interviews. Students who file early will benefit by the careful consideration that can be given to their requests; the later an application is received, the fewer the placement assignments and choices still available will be. Failure to file an application on time may result in a delay of the professional semester.

Transfer and Special Students

No transfer or special student can enter the professional semester until after a full semester of residence and after earning a minimum of 15 credits at UW-Eau Claire. Senior transfer students enrolling in September must file an application for admission to the professional semester during the spring semester of the next academic year must file an application at an education “professional semester” meeting held in spring. Dates for these meetings will be advertised widely and posted across campus.

Students who plan to enter the professional semester during the fall semester of the next academic year must file an application available at an education “professional semester” meeting held each fall. Students who plan to enter the professional semester during the spring semester of the next academic year must file an application at an education “professional semester” meeting held in spring. Dates for these meetings will be advertised widely and posted across campus.

Students are encouraged to submit their applications as soon as possible after the meeting. Considerable time is required to process each application—that is, to determine eligibility, to make arrangements with schools for an appropriate field experience assignment, and to allow for introductions, orientations, and, in some cases, interviews. Students who file early will benefit by the careful consideration that can be given to their requests; the later an application is received, the fewer the placement assignments and choices still available will be. Failure to file an application on time may result in a delay of the professional semester.

Criteria for Admission

No application for admission to the professional semester will be processed in the case of transfer and special students unless a full semester of residence and a minimum of 15 credits have been earned at UW-Eau Claire.

Factors to be considered in the application for admission to the professional semester are:

1. Criteria for admission to a professional program have been met.
2. Good academic standing, as defined in the catalog section on Academic Standing and Progress.
3. A minimum of 90 credits completed prior to the professional semester.
4. Completion of courses which are prerequisite to field experience. For each program, a list of prerequisite courses is available in the Teacher Education Program Office, Centennial 3102.
5. Approval of the major and minor department(s). Departments may have separate criteria they use to determine approval.
6. Resident and total GPAs of at least 2.75; GPAs of at least 2.75 in the major(s) and minor(s) intended for certification; and a 2.75 or higher GPA based on a combination of all course work in the major, minor (where certifiable), and professional education courses, including PSYC 260. All college-level courses attempted by the student are included when major, minor, and total GPAs are determined for admission to the professional semester and for graduation.
7. Teacher Education Candidates shall demonstrate content area proficiency through one of the following:

- Students will earn a minimum 3.0/4.0 GPA in content courses OR through obtaining a passing score on the appropriate Praxis II/ACTFL exam.

For students who neither meet the minimum GPA requirement nor pass the appropriate Praxis II/ACTFL exam after at least two attempts, a content portfolio can be submitted which parallels the content evaluated on the Praxis II/ACTFL exam. The portfolio may only be submitted once. Foreign language majors and minors must earn passing scores on the ACTFL. The standardized examination and passing score shall be determined by the State Superintendent. All Elementary-Middle and Special Education majors and minors, and Early Childhood majors must earn a passing score on the FORT.

### Wisconsin Application

College of Education and Human Sciences graduates who desire to teach in Wisconsin, will apply for licensure using the WI Department of Public Instruction’s (DPI), ELO (Electronic Licensing Online) by following all steps listed on the site including fingerprinting if applicable.

Upon completion of all program requirements and University and WI Department of Public Instruction teaching requirements, information will be forwarded to WI DPI verifying this completion (including the completion of all required tests), a degree and any add-on certifications that have been awarded, and certifications the teaching candidates are eligible for with licensure. Candidates will then apply for their Initial License.

### Out-of-state Applications

It is recommended that graduates seeking licensure to teach in states other than Wisconsin request application forms and instructions from the Department of Education of the state in which licensure is desired. Certification requirements vary by state. Inquiry early in the period of professional preparation is advisable. In most cases, an official transcript of credits must accompany the completed application form; additional tests or course work may be required. Therefore, it is imperative to check requirements of other states. Wisconsin and most other states require institutional endorsement. In general, candidates will be able to obtain licenses in other states; however, these licenses may be issued with stipulations. It is the student’s responsibility to understand the licensing requirements of other states. UW-Eau Claire programs are designed to meet the requirements in Wisconsin only.

### Major Requirements

#### Teaching (Code 241-004)

The comprehensive major in Science Teaching, Biology Emphasis prepares education students to teach all science courses in a regular education setting grades 4 through 12.

Advisors: Robert Duerst

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 221</td>
<td>Foundations of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 222</td>
<td>Foundations of Biology II</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 223</td>
<td>Foundations of Biological Inquiry</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 308</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 323</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>ES 496</td>
<td>Student Academic Apprenticeship</td>
<td>1-2</td>
</tr>
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</table>

#### Choose two: (9 - 10 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 318</td>
<td>Plant Form and Function</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 319</td>
<td>Animal Form and Function</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 361</td>
<td>Biology of Microorganisms</td>
<td>5</td>
</tr>
</tbody>
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#### Additional Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ES 360</td>
<td>Teaching Science in Grades 4-12</td>
<td>3</td>
</tr>
<tr>
<td>ES 385</td>
<td>Social Foundations: Human Relations</td>
<td>3</td>
</tr>
</tbody>
</table>

and choose one: (3cr)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>GEOG 178</td>
<td>Conservation of the Environment</td>
</tr>
<tr>
<td>BIOL 180</td>
<td>Environmental Biology and Conservation</td>
</tr>
</tbody>
</table>

**Physics Emphasis Core 9 - 18**

Choose one option:

Option 1 (9 credits)
- PHYS 211 General Physics
- PHYS 212 General Physics

or

Option 2: (18 credits)
- PHYS 231 University Physics I 5
- PHYS 232 University Physics II 5
- MATH 114 Calculus I 4
- MATH 215 Calculus II 4

**Chemistry Core 6-9**

choose one option:

Option 1 9
- CHEM 105 General Chemistry I Lecture
- CHEM 106 General Chemistry I Laboratory
- CHEM 109 General Chemistry II with Lab

or:

Option 2 6
- CHEM 115 Chemical Principles

**Earth & Space Science Core 11**

- PHYS 226 Astronomy-Solar System 4

and choose one: (4 credits)
- GEOL 106 Earth Science
- GEOL 110 Physical Geology
- GEOL 115 Environmental Geology
- GEOL 118 Societal Issues in Earth Science

and choose one: (3 credits)
- GEOL 301 Earth Resources and Sustainability
- GEOL 304 Global Environmental Change
- GEOL 308 Water Resources