Biology Major and Secondary Education Cognate Major Requirements
Catalog Year: 2015-16
Degree: Bachelor of Science
Credit Hours: 97+ (Biology 61+; Secondary Cognate 36)

Teacher Education Track (Grades 9-12)

Students interested in teacher certification in biology must complete the following courses and the secondary education cognate major requirements. See the School of Education, Health and Human Performance section of the undergraduate catalog for a listing of the required secondary education cognate major courses. Students should apply for acceptance to this program no later than the second semester of their sophomore year. Requirements for this program include admission to and successful completion of the approved teacher education program. Students must successfully complete all requirements for certification in secondary education.

Notes: When declaring teacher certification in biology through the Program of Study Management System (POSM), students must first select “Declare or Add a Major” and then “Secondary Education Cognate” from the major list. Once this selection is made, a second menu box will appear with a list of the associated majors. Select the biology major and follow the on-screen instructions.

“PR” indicates a pre-requisite. “CO” indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses:

- **BIOL 111** Introduction to Cell and Molecular Biology (3) PR: None; CO: BIOL 111L
- **BIOL 111L** Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111
- OR
- **HONS 151** Honors Biology I (3) PR: None; CO: HONS 151L
- **HONS 151L** Honors Biology I Lab (1) CO: HONS 151
- **BIOL 112** Evolution, Form, and Function of Organisms (3) PR: BIOL 111 and 111L; CO: BIOL 112L
- **BIOL 112L** Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112L
- OR
- **HONS 152** Honors Biology II (3) PR: HONS 151 and 151L; CO: HONS 152L
- **HONS 152L** Honors Biology II Lab (1) CO: HONS 152
- **BIOL 211** Biodiversity, Ecology, and Conservation Biology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; CO: BIOL 211D
- **BIOL 211D** Biodiversity, Ecology, and Conservation Biology Discussion (0) CO: BIOL 211
- **BIOL 305** Genetics (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; PR or CO: BIOL 211 and 211D and MATH 250 or instructor permission

19 additional credit hours in courses at the 300-level or above including:

Complete one of the following courses:

- **BIOL 312** Molecular Biology (3) PR: One year of Chemistry and BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; BIOL 211 and 211D and BIOL 305 or CHEM 232 and 232L; PR or CO: MATH 250
- **BIOL 313** Cell Biology (3) PR: One year of Chemistry and BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; and BIOL 211 and 211D or CHEM 232 and 232L; PR or CO: MATH 250; BIOL 305 or CHEM 232 and 232L

Complete one of the following laboratories

- **BIOL 314**
BIOL 305L  Genetics Lab (1) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; PR or CO: BIOL 211 and 211D; BIOL 305 and MATH 250

BIOL 312L  Molecular Biology Laboratory (1) PR or CO: BIOL 312 and MATH 250. Students cannot use both BIOL 412 and BIOL 312L towards their major requirements.

BIOL 313L  Cell Biology Laboratory (1) PR or CO: BIOL 313 and MATH 250

Complete one of the following courses:

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BIOL 304  Plant Physiology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and one year of chemistry; PR or CO: BIOL 305 and MATH 250

BIOL 321  General and Comparative Physiology (4) PR: One year of Chemistry and BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L; BIOL 211 and 211D and BIOL 305 or CHEM 232 and 232L; PR or CO: MATH 250 or equivalent course in statistics or instructor permission

Complete at least one course from the following:

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BIOL 300  Botany (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 302  Plant Anatomy (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 303  Phycology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 304*  Plant Physiology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and one year of chemistry; PR or CO: BIOL 305 and MATH 250

Note: *BIOL 304 may be used to fulfill the other above requirements.

Complete at least four credit hours from the following:

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BIOL 310  General Microbiology (4) PR: One year of Chemistry and BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: MATH 250; BIOL 305 or CHEM 232 and 232L

BIOL 322  Developmental Biology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 323  Comparative Anatomy of Vertebrates (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 332  Vertebrate Zoology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 333  Ornithology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 334  Herpetology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 335  Biology of Fishes (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250
BIOL 336 Parasitology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; PR or CO: MATH 250

BIOL 337 Invertebrate Zoology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 338 Entomology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 343 Animal Behavior (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; PR or CO: MATH 250

BIOL 343L Animal Behavior (1) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; PR or CO: BIOL 343, and MATH 250

Select 3-7 credit hours of any 300-level course listed above or from the following:

BIOL 314 Immunology (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and one year of Chemistry; PR or CO: MATH 250

BIOL 340 Zoogeography (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 341 General Ecology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250

BIOL 342 Oceanography (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250; one year of college-level Math and one year of college-level Chemistry

BIOL 350 Evolution (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; PR or CO: MATH 250

BIOL 354 Techniques in Neuroscience (4) PR: BIOL 351 or PSYC 351; MATH 250 or PSYC 211 and PSYC 220 or PSYC 250; and instructor permission

BIOL 356 Comparative Biomechanics (4) PR: BIOL 111/111L or HONS 151/151L and BIOL 112/112L or HONS 152/152L, and BIOL 211; PR or CO: BIOL 305, MATH 250 and PHYS 101/101L or 111/111L; or instructor permission.

BIOL 359 Study Abroad in Neuroscience (4) PR: Permission of instructor

BIOL 406 Conservation Biology (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305 and BIOL 341 or permission of instructor; PR or CO: MATH 250

BIOL 410 Applied and Environmental Microbiology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; BIOL 310 and one year of Chemistry; PR or CO: BIOL 305 and MATH 250

BIOL 420 General and Comparative Endocrinology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; PR or CO: BIOL 305 and MATH 250 and a course in physiology or instructor permission

BIOL 421 Topics in Physiology, Cell, and Molecular Biology of Marine Organisms (3) PR: BIOL 312 or 313; BIOL 321 and instructor permission; PR or CO: MATH 250

BIOL 423 Genomics (4) PR: BIOL 305; BIOL 312 or BIOL 313; MATH 250

BIOL 444 Plant Ecology (4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 341 or instructor permission; PR or CO: BIOL 305 and MATH 250

BIOL 445 Systematic Biology (3) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; junior standing and at least one upper division course in organismal Biology; PR or CO: MATH 250

BIOL 450 Problems in Biology (1-4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; 3.00 GPA or higher in science courses; junior standing and instructor and department chair permission; PR or CO: MATH 250
BIOL 451  Problems in Marine Biology (1-4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and BIOL 305; 3.00 GPA or higher in science courses; junior standing and instructor and department chair permission; PR or CO: MATH 250

BIOL 452  Seminar (1) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D; 2.50 GPA or higher in BIOL; junior standing and 15 credit hours of BIOL completed; PR or CO: BIOL 305 and MATH 250

BIOL 453  Special Topics (1-4) PR: BIOL 111 and 111L or HONS 151 and 151L and BIOL 112 and 112L or HONS 152 and 152L and BIOL 211 and 211D and instructor permission; PR or CO: BIOL 305 and MATH 250

Mathematics Requirement
- MATH 120  Introductory Calculus (4) PR: Placement or C. or better in MATH 111
- MATH 250  Statistical Methods I (3) PR: MATH 105 with a C- grade or better or MATH 111 or MATH 120 or permission of instructor

Physics Requirement
- PHYS 101  Introductory Physics (3) PR: None; CO or PR: PHYS 101L
- PHYS 101L  Introductory Physics Lab (1) CO: PHYS 101

AND
- PHYS 102  Introductory Physics II (3) PR: PHYS 101 or PHYS 111 or HONS 157; CO: PHYS 102L
- PHYS 102L  Introductory Physics Lab (1) CO: PHYS 102

OR
- PHYS 111  General Physics I (3) PR or CO: MATH 120 or equivalent or instructor permission; CO: PHYS 111L
- PHYS 111L  General Physics I Lab (1) CO: PHYS 111

AND
- PHYS 112  General Physics II (3) PR: PHYS 111 or HONS 157; CO or PR: MATH 220 or equivalent or instructor permission; CO: PHYS 112L
- PHYS 112L  General Physics II Lab (1) CO: PHYS 112

Chemistry Requirement
- CHEM 111  Principles of Chemistry (3) PR or CO: unless students exempt MATH 111 (via diagnostic testing) or have completed this course as a pre-requisite, they are required to take MATH 111 as a co-requisite; CO: CHEM 111L
- CHEM 111L  Principles of Chemistry Lab (1) CO: CHEM 111

AND
- CHEM 112  Principles of Chemistry (3) PR: CHEM 111 and 111L or HONS 153 and 153L; CO: CHEM 112L (MATH 120 strongly recommended)
- CHEM 112L  Principles of Chemistry Lab (1) CO: CHEM 112

AND
- CHEM 102  Organic and Biological Chemistry (3) PR: CHEM 101 and 101L or CHEM 111 and 111L; CO: CHEM 102L
- CHEM 102L  Organic and Biological Chemistry Lab (1) CO: CHEM 102

OR
- CHEM 231  Organic Chemistry (3) PR: CHEM 112 and CHEM 112L or HONS 154 and HONS 154L; CO: CHEM 231L
- CHEM 231L  Introduction to Organic Chemistry Laboratory Techniques (1) CO: CHEM 231

Notes:
- MATH 250 is a pre-requisite for all 300-level BIOL courses.
- CHEM 220/220L are recommended courses.
- Honors students can take the alternative sequence of HONS191/HONS191L, HONS 192/HONS192L, HONS293/HONS293L, and HONS294/HONS294L in lieu of CHEM 111/111L, CHEM 112/112L, CHEM 231/231L, and CHEM 232/CHM 232L
- Honors students can take the alternative sequence of HONS157/HONS157L and HONS 158/HONS158L in lieu of PHYS 111/111L and PHYS112/112L
Secondary Cognate Major Requirements

“PR” indicates a pre-requisite. “CO” indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Students interested in teacher certification in secondary education must complete a content major, additional coursework required for certification (if applicable), and the secondary education cognate major requirements. Content majors are available in biology (Bachelor of Science Teaching Option), chemistry (Bachelor of Arts), English (Bachelor of Arts), history (Bachelor of Arts, for certification in social studies), mathematics (Bachelor of Science teacher education track), and physics (Bachelor of Arts). Students must successfully complete all requirements for certification in secondary education.

Required Courses

☐ COMM 104  Public Speaking (3) PR: None

☐ EDFS 201*  Foundations of Education (3) PR: Sophomore standing.

Note: *EDFS 201 is prerequisite to all other education courses with a grade of C or better.

☐ EDFS 303  Human Growth and Development and the Educational Process (3) PR: None

☐ EDFS 326*  Integrating Technology Into Teaching (3) PR: None

☐ EDFS 330*  Classroom and Behavior Management (3) PR: junior or above

☐ EDFS 345  Introduction to the Education of Exceptional Children and Youth (3) PR: EDFS 303.

☐ EDFS 455  Literacy and Assessment in the Content Areas (3)

☐ EDFS 456  Teaching Strategies in the Content Areas (English, Math, Science, Social Studies) (3)

Note: *Students must enroll in the Secondary sections for each of the courses marked with an asterisk. (See associate department chair to register for courses.) Each course requires a school-based field experience. Students will need a 3-hour block of time per week between the hours of 7 a.m. and 2 p.m. Monday through Friday, to complete each school-based experience.

Clinical Practice Internship Requirement

☐ EDFS 460*  Clinical Practice in the Content Area (12) PR: Admission to a teacher education program and completion of all education requirements. This course is graded pass-fail. A grade of "P" carries only earned hours. It does not carry quality hours or quality points.

Note: *Students seeking recommendation for South Carolina certification in Secondary Education must complete the program of study above and meet the admission, retention, and exit requirements of the program and the School of Education, Health, and Human Performance. Recommendation to the South Carolina Department of Education for certification in South Carolina is contingent upon successful completion of Clinical Practice, and achievement of passing scores on the necessary Praxis II test(s) for recommendation. Students who do not take Clinical Practice may not earn a degree in Secondary Education and will not be recommended for certification. See your faculty advisor for additional information.

Notes:

- You should apply for admission (this is NOT declaring your major) to the Teacher Education Program the semester you are enrolled in EDFS 201 Foundations of Education. Requirements for admission:
  - Minimum overall GPA of 2.75 and 60 earned credit hours.
  - Passing score on the 3 components of the PRAXIS 1: Pre-Professional Skills Test (Reading, Writing, and Mathematics) as designated by the South Carolina Department of Education OR qualifying SAT or ACT scores.
  - Disposition forms from (a) a general education faculty member, (b) your EDFS 201 professor, and (c) someone who has observed you working with children.
• If a student has transfer credit for a course that is equivalent to EDFS 201, they must meet with the Teacher Education department chair and complete 1 hour of work.

• A grade of C or better in EDFS 201 Foundations of Education.

• Your admission process must be completed before beginning the professional program.

• You must complete a major in the content area and the cognate major to be forwarded to the State Department of Education for certification.