Chemistry Major and Secondary Cognate Major Requirements
Catalog Year: 2014-15
Degree: Bachelor of Arts
Credit Hours: 86+ (Chemistry 42+; Secondary Cognate 44)

“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.

Chemistry Teacher Education Program (Grades 9-12)

Students interested in teacher certification in chemistry must complete both the chemistry major 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 include admission to and successful completion of the approved teacher education program. Students must successfully complete all requirements for certification in secondary education.

When declaring teacher certification in chemistry through the Program of Study Management System (POS), 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 chemistry major and follow the on-screen instructions.

Required Courses

- CHEM 111 Principles of Chemistry (3) PR: MATH 111 or equivalent; CO: CHEM 111L
- CHEM 111L Principles of Chemistry Lab (1) CO: CHEM 111
- CHEM 112 Principles of Chemistry (3) PR: CHEM 111, CHEM 111L or HONS 153, HONS 153L; CO: CHEM 112L
- CHEM 112L Principles of Chemistry Lab (1) CO: CHEM 112
- CHEM 220 Fundamentals of Analytical Chemistry (3) PR: CHEM 112 and CHEM 112L or HONS 154, HONS 154L; CO: CHEM 220L
- CHEM 220L Fundamentals of Analytical Chemistry Lab (2) PR: CHEM 112 and CHEM 112L or HONS 154 and HONS 154L; CO: CHEM 220
- CHEM 231 Organic Chemistry (3) PR: CHEM 112, CHEM 112L or HONS 154, HONS 154L; CO: CHEM 231L
- CHEM 231L Introduction to Organic Chemistry Laboratory Techniques (1) CO: CHEM 231
- CHEM 232 Organic Chemistry (3) PR: CHEM 231, CHEM 231L; CO: CHEM 232L
- CHEM 232L Organic Synthesis and Analysis (1) CO: CHEM 232
- CHEM 341 Physical Chemistry (3) PR: CHEM 220, CHEM 220L and MATH 220; CO: CHEM 341L (MATH 221 is strongly recommended.)
- CHEM 341L Physical Chemistry Laboratory (1) CO: CHEM 341
- CHEM 342 Physical Chemistry (3) PR: CHEM 341, CHEM 341L; CO: CHEM 342L
- CHEM 342L Physical Chemistry Laboratory (1) CO: CHEM 342
- CHEM 492 Senior Seminar (1) PR: CHEM 341 and senior standing

Additional Chemistry Elective: Select 3 credit hours from any 300-level or above CHEM course excluding CHEM 483.

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CHEM 311 Inorganic Chemistry (3) PR: CHEM 232, CHEM 232L
CHEM 312L Inorganic Chemistry Laboratory (1) CO: CHEM 311
CHEM 343 Introduction to Modeling in Chemistry (1) PR: CHEM 231, CHEM 231L
CHEM 351 Biochemistry (3) PR: CHEM 232, CHEM 232L
CHEM 352 Biochemistry (3) PR: CHEM 351
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>PR/CO Requirements</th>
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</thead>
<tbody>
<tr>
<td>CHEM 353</td>
<td>Chemical Biology (3)</td>
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<td>CHEM 354</td>
<td>Biochemistry Laboratory (1)</td>
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<td>CHEM 355</td>
<td>Research Methods in Biochemistry (2)</td>
<td>CHEM 354L</td>
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<td>CHEM 356</td>
<td>Biochemical Basis of Disease (2)</td>
<td>CHEM 351</td>
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<td>CHEM 371</td>
<td>Chemical Synthesis Character (3)</td>
<td>CHEM 220, CHEM 220L, CHEM 232, CHEM 232L</td>
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<tr>
<td>CHEM 381*</td>
<td>Internship (1, repeatable up to 4)</td>
<td>Junior or senior standing and at least a 2.50 GPA both overall and in major</td>
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<td>CHEM 399*</td>
<td>Tutorial (3; repeatable up to 12)</td>
<td>Junior or senior standing and at least a 2.50 GPA both overall and in major</td>
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<td>CHEM 421</td>
<td>Instrumental Methods of Analysis (3)</td>
<td>CHEM 220, CHEM 220L; CO: CHEM 421</td>
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<td>CHEM 421L</td>
<td>Instrumental Laboratory (1)</td>
<td>CHEM 220, CHEM 220L; CO: CHEM 421</td>
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<td>CHEM 422</td>
<td>Environmental Chemistry (3)</td>
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<td>CHEM 422L</td>
<td>Environmental Chemistry Laboratory (1) PR or CO: CHEM 421</td>
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<td>CHEM 431</td>
<td>Advanced Organic Chemistry (3)</td>
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<td>CHEM 441</td>
<td>Advanced Physical Chemistry (3)</td>
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<td>CHEM 481</td>
<td>Introductory Research (2)</td>
<td>PR: Instructor permission</td>
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<tr>
<td>CHEM 482</td>
<td>Introductory Research II (2)</td>
<td>PR: Instructor permission</td>
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<tr>
<td>CHEM 490</td>
<td>Chemistry and Biochemistry Seminar (1)</td>
<td>Junior or senior standing</td>
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<tr>
<td>CHEM 499</td>
<td>Bachelor’s Essay (6)</td>
<td>PR: Instructor permission; a project proposal must be submitted in writing and approve by the department prior to registration for the course</td>
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**Notes:** *CHEM 381 is repeatable up to 4 credit hours earned. *CHEM 399 is repeatable up to 12 credit hours earned.

**Math Requirement**

- [ ] MATH 120   Introductory Calculus (4) PR: Placement or C or better in MATH 111
- [ ] MATH 229   Vector Calculus with Chemical Applications (5) PR: Placement or C or better MATH 120 or HONS 115

**Notes:**

- Honors students can take the alternative sequence of HONS 191/HONS 191L, HONS 192/HONS192L, HONS 293/HONS293L, and HONS 294/HONS294L in lieu of CHEM 111/111L, CHEM 112/112L, CHEM 231/231L, and CHEM 232/232L.

**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](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), 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 the Educational Process (3) PR: None
EDFS 326* Integrating Technology into Teaching (3) PR: None
EDFS 330* Classroom and Behavior Management (3) PR: EDFS 201 and class rank of junior or above
EDFS 345 Introduction to the Education of Exceptional Children and Youth (3) PR: EDFS 303 or equivalent.
EDFS 455 Literacy and Assessment in the Content Areas (3) PR: None
EDFS 456 Teaching Strategies in the Content Areas (English, Math, Science, Social Studies) (3) PR: None

Note: *Candidates who have received credit for PSYC 224 (previously listed as PSYC 311) prior to beginning a teacher education program should not take EDFS 303 (credit will not be awarded). 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.

Additional Coursework required beyond Content major (Chemistry, BA) for Chemistry Certification:

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

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 2.60 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.