Chemistry Major Requirements
Catalog Year: 2014-15
Degree: Bachelor of Arts
Credit Hours: 40+

“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**

- 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 and 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 220/220L 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.

- 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
- CHEM 353 Chemical Biology (3) PR: CHEM 351
- CHEM 354 Biochemistry Laboratory (1) PR: CHEM 351
- CHEM 355 Research Methods in Biochemistry (2) PR: CHEM 354L
- CHEM 356 Biochemical Basis of Disease (2) PR: CHEM 351
- CHEM 371 Chemical Synthesis Character (3) PR: CHEM 220, CHEM 220L, CHEM 232, CHEM 232L
- CHEM 381* Internship (1, repeatable up to 4) PR: Junior or senior standing and at least a 2.50 GPA both overall and in major
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHEM 399 *</td>
<td>Tutorial (3; repeatable up to 12) PR: 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) PR: CHEM 220, CHEM 220L; CO: CHEM 421L</td>
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<td>CHEM 421L</td>
<td>Instrumental Laboratory (1) PR: CHEM 220, CHEM 220L; CO: CHEM 421</td>
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<td>CHEM 422</td>
<td>Environmental Chemistry (3) PR: CHEM 220, CHEM 220L</td>
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<td>CHEM 422L</td>
<td>Environmental Chemistry Laboratory (1) PR or CO: CHEM 422</td>
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<td>CHEM 431</td>
<td>Advanced Organic Chemistry (3) PR: CHEM 232, CHEM 232L</td>
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<td>CHEM 441</td>
<td>Advanced Physical Chemistry (3) PR: CHEM 341, CHEM 342</td>
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<td>CHEM 481</td>
<td>Introductory Research (2) PR: Instructor permission</td>
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<td>CHEM 482</td>
<td>Introductory Research II (2) PR: Instructor permission</td>
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<td>CHEM 490</td>
<td>Chemistry and Biochemistry Seminar (1) PR: Junior or senior standing</td>
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<td>CHEM 499</td>
<td>Bachelor’s Essay (6) PR: Instructor permission; a project proposal must be submitted in writing and approved 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:**

- MATH 220 is recommended for students who want to go to graduate school.
- Honors students can take the alternative sequence of HONS 191/HONS 191L, HONS 192/HONS 192L, HONS 293/HONS 293L, and HONS 294/HONS 294L in lieu of CHEM 111/111L, CHEM 112/112L, CHEM 231/231L, and CHEM 232/232L. Please note in this case CHEM 220/220L cannot be taken until CHEM 294/294L is complete.
- All junior and senior chemistry majors are strongly encouraged to attend the scheduled departmental seminars.
- Students who have completed PHYS 101 Introductory Physics I and PHYS 102 Introductory Physics II before declaring a chemistry or biochemistry major may satisfy this requirement by taking additional related courses. Please see the department chair for the list of courses.