Chemistry Major Requirements
Catalog Year: 2015-16
Degree: Bachelor of Arts
Credit Hours: 42+

“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 Thermodynamics, Statistical Thermodynamics and Chemical Kinetics (3) PR: CHEM 220/220L, MATH 229 or (MATH 220 and MATH 221); CO: CHEM 341L
☐ CHEM 341L Thermodynamics, Statistical Thermodynamics and Chemical Kinetics Laboratory (1) CO: CHEM 341

☐ CHEM 343 Introduction to Modeling in Chemistry (3) PR: CHEM 220/220L, MATH229 or (MATH 220 and MATH 221); CO: CHEM 342L
☐ CHEM 342 Quantum Chemistry and Spectroscopy (3) PR: CHEM 220/220L, MATH229 or (MATH 220 and MATH 221); CO: CHEM 342L
☐ CHEM 342L Quantum Chemistry and Spectroscopy 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
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
Chemistry Courses:

- **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.
- **CHEM 399** Tutorial (3; repeatable up to 12) PR: Junior or senior standing and at least a 2.50 GPA both overall and in major.
- **CHEM 421** Instrumental Methods of Analysis (3) PR: CHEM 220, CHEM 220L; CO: CHEM 421L.
- **CHEM 421L** Instrumental Laboratory (1) PR: CHEM 220, CHEM 220L; CO: CHEM 421.
- **CHEM 422** Environmental Chemistry (3) PR: CHEM 220, CHEM 220L.
- **CHEM 422L** Environmental Chemistry Laboratory (1) PR or CO: CHEM 422.
- **CHEM 431** Advanced Organic Chemistry (3) PR: CHEM 232, CHEM 232L.
- **CHEM 441** Advanced Physical Chemistry (3) PR: CHEM 341, CHEM 342.
- **CHEM 481** Introductory Research (2) PR: Instructor permission.
- **CHEM 482** Introductory Research II (2) PR: Instructor permission.
- **CHEM 490** Chemistry and Biochemistry Seminar (1) PR: Junior or senior standing.
- **CHEM 499** 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.

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.
- OR
- MATH 220 Calculus II (4) PR: MATH 120 or HONS 115.
- AND
- MATH 221 Calculus III (4) PR: MATH 220.

Notes:

- Students with a double major in Physics and/or Mathematics should complete the MATH 120, 220, and 221 sequence.
- 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.