

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 342 Quantum Chemistry and Spectroscopy (3) PR: CHEM 220/220L, MATH 229 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.

- 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) <i>PR: Junior or senior standing and at least a 2.50 GPA both overall and in major</i>
CHEM 399 *	Tutorial (3; repeatable up to 12) <i>PR: Junior or senior standing and at least a 2.50 GPA both overall and in major</i>
CHEM 421	Instrumental Methods of Analysis (3) <i>PR: CHEM 220, CHEM 220L; CO: CHEM 421L</i>
CHEM 421L	Instrumental Laboratory (1) <i>PR: CHEM 220, CHEM 220L; CO: CHEM 421</i>
CHEM 422	Environmental Chemistry (3) <i>PR: CHEM 220, CHEM 220L</i>
CHEM 422L	Environmental Chemistry Laboratory (1) <i>PR or CO: CHEM 422</i>
CHEM 431	Advanced Organic Chemistry (3) <i>PR: CHEM 232, CHEM 232L</i>
CHEM 441	Advanced Physical Chemistry (3) <i>PR: CHEM 341, CHEM 342</i>
CHEM 481	Introductory Research (2) <i>PR: Instructor permission</i>
CHEM 482	Introductory Research II (2) <i>PR: Instructor permission</i>
CHEM 490	Chemistry and Biochemistry Seminar (1) <i>PR: Junior or senior standing</i>
CHEM 499	Bachelor's Essay (6) <i>PR: Instructor permission; a project proposal must be submitted in writing and approved by the department prior to registration for the course</i>

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.