Biochemistry Major Requirements
Catalog Year: 2015-16
Degree: Bachelor of Science
Credit Hours: 75+

“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 or HONS 191, HONS 191L; 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 311 Inorganic Chemistry (3) PR: CHEM 232, CHEM 232L
- CHEM 312L Inorganic Chemistry Laboratory (1) CO: CHEM 311
- 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, MATH229 or (MATH 220 and MATH 221); CO: CHEM 342L
- CHEM 342L Quantum Chemistry and Spectroscopy Laboratory (1) CO: CHEM 342
- CHEM 351 Biochemistry (3) PR: CHEM 232, CHEM 232L
- CHEM 352 Biochemistry II (3) PR: CHEM 351
- CHEM 354L Biochemistry II (1) PR: CHEM 351
- CHEM 490 Chemistry and Biochemistry Seminar (1) PR: Junior or senior standing
- CHEM 492 Senior Seminar (1) PR: CHEM 341 and senior standing

Select 2 of the following courses that add up to a minimum of 3 lab credit hours. (Note: CHEM 371 is 2 credit hours lab and 1 credit hour lecture)

- CHEM 312L Inorganic Chemistry Laboratory (1) CO: CHEM 311
- CHEM 355 Research Methods in Biochemistry (2) PR: CHEM 354L
- CHEM 371 Chemical Synthesis Character (3) PR: CHEM 220, CHEM 220L, CHEM 232, CHEM 232L
- CHEM 421L Instrumental Laboratory (1) PR: CHEM 220, CHEM 220L; CO: CHEM 421
- CHEM 422L Environmental Chemistry Laboratory (1) PR or CO: CHEM 422
- CHEM 481 Introductory Research (2) PR: Instructor permission
CHEM 482  Introductory Research II (2) PR: Instructor permission

Select one of the following courses:

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CHEM 353  Chemical Biology (3) PR: CHEM 351

CHEM 356  Biochemical Basis of Disease (2) PR: CHEM 351

CHEM 421  Instrumental Methods of Analysis (3) PR: CHEM 220, CHEM 220L; CO: CHEM 421L

CHEM 422  Environmental Chemistry (3) PR: CHEM 220, CHEM 220L

CHEM 431  Advanced Organic Chemistry (3) PR: CHEM 232, CHEM 232L

Biology Requirement

☐ 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

☐ 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 112

☐ 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 312  Molecular Biology (3) PR: 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; and CHEM 111 and 111L and CHEM 112 and 112L; PR or CO: MATH 250 or instructor permission for biochemistry majors

☐ BIOL 312L  Molecular Biology Laboratory (1) PR or CR: BIOL 312 and MATH 250 or instructor permission for biochemistry majors

Physics Requirement

☐ 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

☐ 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

Mathematics 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.

• MATH 250 is a pre-requisite for all 300-level BIOL courses but can be waived with instructor permission for biochemistry majors

• 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.

• Honors students can take the alternative sequence of HONS 157/HONS 157L and HONS 158/HONS 158L in lieu of PHYS 111/111L and PHYS 112/112L.

• All junior and senior chemistry majors are strongly encouraged to attend the scheduled department 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.