

Department of Biology and Chemistry

The Department of Biology and Chemistry (<http://www.apu.edu/clas/biochem/>) serves God through the integration of a Christian perspective into the disciplines of biology and chemistry, providing an environment in which students can develop a Christian worldview and learn to integrate their faith into their lives as scientists, and prepare for success in further studies and/or their chosen careers.

The department offers science courses that are consistent with the majors offered, that meet the goals of the General Education program (<http://catalog.apu.edu/academics/general-education/>), and that serve as support courses for students in other majors. Programs offered include Bachelor of Arts degrees in Allied Health (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/allied-health-ba/>), Allied Health with a Business Emphasis (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/allied-health-ba/#alliedhealthbusinesssemphasistext>), and Chemistry (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/chemistry-ba/>); Bachelor of Science degrees in Allied Health (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/allied-health-bs/>), Allied Health with Integrated Single Subject (Science) Teaching Credential (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/allied-health-bs-with-integrated-bachelors-credential/>), Biological Sciences (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/biological-sciences-bs/>), Chemistry (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/chemistry-bs/>), and Biochemistry (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/biochemistry-bs/>); and a Master of Science in Biotechnology (<http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/biotechnology-ms/>).

Requirements for Allied Health, Biochemistry, Biological Sciences (previously Biology), and Chemistry Majors

While the Department of Biology and Chemistry does not cap enrollment in these majors, students are expected to demonstrate certain levels of achievement (detailed below) to enter and remain in these majors.

Entrance Requirements

Freshmen Applicants

To qualify for a major in allied health, biological sciences (previously biology), biochemistry, or chemistry, freshman applicants must submit documentation of the following (or their equivalents) and indicate their choice for one of those majors to the Office of Undergraduate Admissions (<https://www.apu.edu/undergraduate-admissions/>) before the start of classes. After that date, the requirements in the Matriculated APU Students section (below) must be met.

- High school GPA of 3.0+
- At least three years of high school math (an average of C- or higher across all three years) or SAT Math score of 530+ or ACT Math score of 21+*
- At least 2 years of high school science (with a B or higher in either biology or chemistry)

*All freshmen students are required to take the ALEKS math placement assessment (or satisfy criteria 1-8 of GE Quantitative Literacy) before the start of classes to determine which math course to enroll in and whether the appropriate math prerequisites have been met for CHEM 151 and BIOL 151.

Transfer Applicants

To qualify for a major in allied health, biological sciences (previously biology), biochemistry, or chemistry, transfer applicants must submit documentation of the following (or their equivalents) and indicate their choice for one of these majors to the Office of Undergraduate Admissions before the start of classes. After that date, the requirements in the Matriculated APU Students section (below) must be met.

- Community college/university GPA of 2.8+
- Completion of Intermediate Algebra or higher (C- or higher)*
- Completion of a one-semester science course (C- or higher, biology or chemistry course recommended)**

*Transfer students may be required to take the ALEKS math placement assessment before the start of classes to determine which math course to enroll in and whether the appropriate math prerequisites have been met for CHEM 151 and BIOL 151, as applicable.

**Transfer students who do not meet the transfer applicant requirements may submit their high school transcript to demonstrate satisfaction of the freshman applicant requirements.

Matriculated APU Students

To qualify for a major in allied health, biological sciences (previously biology), biochemistry, or chemistry, matriculated APU students must submit evidence of all of the following:

- Completion of a BIOC, BIOL, or CHEM course required for the desired major (C- or higher)
- Completion of MATH 95, current ALEKS score of 45+, SAT Math score of 530+, or ACT Math score of 21+
- Completion of prospective major advising in the Department of Biology and Chemistry

Milestone Completion

In order to progress through the allied health, biological sciences (previously biology), biochemistry, or chemistry major, two milestones need to be completed. Completion of Milestone 1 allows the student to become a candidate for lower-division courses, and completion of Milestone 2 enables the student to become a candidate for upper-division courses. These milestones are as follows:

Milestone 1

Allied Health/Biological Sciences (previously Biology): C- or higher in BIOL 151 (prerequisite: completion or waiver of MATH 95 or equivalent [for example, by a 45 ALEKS])

Biochemistry/Chemistry: C- or higher in CHEM 151 (prerequisite: B- or higher in MATH 110 or equivalent [for example, by a 65 ALEKS])

All students who have not satisfied prerequisites to begin Milestone 1 courses should instead take the appropriate prerequisite courses. In some cases, such students may require more than eight semesters to complete the requirements for the major.

Milestone 2

Allied Health (BS, BA with Business Emphasis)/Biological Sciences (previously Biology): C- or higher in BIOL 280 (prerequisites: C- in BIOL 240 and CHEM 151)

Allied Health (BA): C- or higher in BIOL 251 (prerequisites: C- in BIOL 250 and C- in CHEM 151 or B in one year of high school chemistry)

Biochemistry: C- or higher in BIOL 280 (prerequisites: C- in BIOC 270 and CHEM 151) **and** CHEM 252 (prerequisite: C- in CHEM 251; corequisite: CHEM 262)

Chemistry: C- or higher in CHEM 300 (prerequisite: C- in CHEM 152)

Department Policies

The following are policies that apply to all students in courses offered by the department:

- A student must complete all prerequisites for a BIOC, BIOL, or CHEM course with a C- or higher before taking the course (except as noted in the course description).
- Students with a total of three unsuccessful attempts (below C-) in any combination of BIOC, BIOL, and CHEM courses will be automatically dropped from subsequent enrollment in department courses.
- Any single BIOC, BIOL, or CHEM course may be taken only two times at APU.
- Students may not earn a chemistry minor if they are majoring in biochemistry, nor may they earn a biology minor if they are majoring in allied health or biochemistry.
- Students missing more than three labs in a course receive an automatic F in the course.
- Courses with labs in an online or correspondence format are not allowed to transfer as BIOC, BIOL, or CHEM courses.

Additional Requirements for Allied Health, Biological Sciences (previously Biology), Biochemistry, and Chemistry Majors and Biology or Chemistry Minors

All of the following requirements must be met to continue as an allied health, biological sciences (previously biology), biochemistry, or chemistry major or as a biology or chemistry minor. Failure to maintain these requirements will result in a student being dropped from the major or minor. Reentry to the major or minor is by petition only.

- A minimum cumulative GPA of 2.0 in all biology, chemistry, biochemistry, math, and physics courses required for the major or minor must be maintained.
- A student must complete each course required for the major or minor with a C- or higher for the course to meet a degree requirement in the Department of Biology and Chemistry.
- Any single class within the major or minor can be taken only two times at APU; students must change to a major or minor outside the department after two unsuccessful (below C-) attempts in a single required course.

- Only two courses total within the major or minor can be repeated; students must change to a major or minor outside the department after unsuccessful (below C-) attempts in any three required courses.
- All majors are required to take BIOL 496 to meet their General Education Senior Seminar or Writing 3 requirement.
- While courses required of the major or minor may be taken at other accredited institutions, subject to approval via a transfer inquiry form, lecture and laboratory components must be taken at the same institution in the same semester.
- It is strongly recommended that freshmen in all biological sciences majors (including biochemistry) take General Chemistry I (CHEM 151) and General Biology I (BIOL 151) the first year, and that chemistry majors start with General Chemistry I (CHEM 151) and Calculus I (MATH 165) the first year. Should math placement assessment require algebra of the student, then that course should be taken the first year and a five-year program may be indicated.
- BIOL 151 should be taken by allied health, biochemistry, and biological sciences majors and biology or chemistry minors who receive AP biology credit, as many medical schools and graduate programs will not accept AP biology to meet requirements for admission.
- Students may take a maximum of 3 units total from the following courses for elective credit toward the BS in Allied Health, the BA in Allied Health, the BS in Biological Sciences, or the minor in biology:

Code	Title	Units
BIOL 390	Pre-health Seminar	1
BIOL 391	Medical Missions Practicum	1
BIOL 394	Directed Research Internship	1-3
BIOL 395	Biological Science Internship	1-3
BIOL 490	Biology Seminar	1
BIOL 497	Readings	1-3

- The following courses may **not** be taken to meet upper-division elective requirements in any major or minor in the department: BIOL 325, BIOL 330, BIOL 400, and BIOL 470.

Dismissal Policy

The department will audit student compliance with these policies each semester. Failure to maintain these requirements will result in the student being dropped from the major or minor. Reentry to the major or minor is by petition only.

Science at the Secondary Level

Students planning a career in teaching science at the secondary level should prepare for the CSET examination. Students should major in biological sciences, chemistry, or physics to obtain subject-matter proficiency in one of these areas for the specialization test. In addition, to prepare for the breadth part of the test, students should take:

Code	Title	Units
BIOL 151	General Biology I	4
BIOL 152	General Biology II	4
CHEM 151	General Chemistry I	4
CHEM 152	General Chemistry II	4
PHYC 125	Earth Science Concepts and Applications	3
Select one of the following:		8-10
PHYC 155 & PHYC 156	Physics for Life Sciences I and Physics for Life Sciences II	
PHYC 165 & PHYC 166	Physics for Science and Engineering: Mechanics and Physics for Science and Engineering: Electricity and Magnetism	
PHYC 145	Physics Laboratory I	1
PHYC 146	Physics Laboratory II	1

Biology and Chemistry Fellowships

Each year, the Department of Biology and Chemistry offers a limited number of fellowships to selected undergraduates to participate in the Student-to-Scholar (S2S) Program (<http://www.apu.edu/clas/biochem/fellowships/>) involving laboratory research with a faculty-mentor.