

## Spring 2019 Chemistry for the Life Sciences Frequently Asked Questions (FAQs)

### For Students Deciding between Chemistry Sequences

#### 1. What is the Chemistry for the Life Sciences course sequence?

**Answer:** The Chemistry for the Life Sciences course sequence is a 3-course, 13 credit chemistry course sequence in which students complete chemistry coursework typically found in one year of general/inorganic chemistry and one year of organic chemistry over the course of 3 total semesters. After completing this course series, students are able to advance onto biochemistry and molecular biology coursework.

#### 2. Why was the sequence created?

**Answer:** In the fall of 2016, the University of Minnesota Department of Chemistry began to offer a 3-course, 13-credit Chemistry for the Life Sciences sequence that they created upon CBS's request. This three-semester series was developed specifically to prepare students in life sciences with the chemistry knowledge needed to be successful in their life sciences domains, including the health professions. In reducing content that is less central to the life sciences, the sequence allows students to progress through the chemistry content most critical to the life sciences at an accelerated pace, as well as engage in more advanced coursework earlier in their academic careers.

#### 3. How is the Chemistry for the Life Sciences course sequence different than the Chemistry 1061 (Traditional) course sequence?

**Answer:** The Chemistry for the Life Sciences course sequence allows students to complete coursework typically found in four semesters of chemistry (General/Inorganic Chemistry 1 & 2 and Organic Chemistry 1 & 2) over the course of three semesters at an accelerated pace. Students in the College of Biological Sciences (CBS) complete the following courses in the Chemistry for the Life Sciences course sequence:

##### Chemistry for the Life Sciences Course Sequence

##### **CHEM 1081/1065: Chemistry for Life Sciences I and Lab (3 credits lecture, 1 credit lab):**

Similar to traditional first-semester general chemistry courses, this pairing is paced more quickly, covering content from general chemistry I and moving on to content typically covered in a second semester of general chemistry.

##### **CHEM 1082/1086: Chemistry for Life Sciences II and Lab (3 credits lecture, 1 credit lab):**

These courses complete general chemistry education and begin organic chemistry content.

##### **CHEM 2081/2085: Chemistry for Life Sciences III and Lab (3 credits lecture, 2 credits lab):**

This final semester focuses exclusively on remaining organic chemistry content and its application.

At the end of this sequence, students obtain **13 credits of General Chemistry through Organic Chemistry.**

The sequence is able to be shorter than a traditional series by streamlining topics that are typically covered in both general and organic chemistry, cutting review topics, and eliminating topics less central to the life sciences such as nuclear chemistry, transitional metal and coordination chemistry, and molecular orbital theory.

Students in the Chemistry 1061 (Traditional) course sequence complete the following:

Chemistry 1061 (Traditional) Course Sequence

**CHEM 1061/1065: Chemical Principles I and Lab (3 credits lecture, 1 credit lab)**

**CHEM 1062/1066: Chemical Principles II and Lab (3 credits lecture, 1 credit lab)**

**CHEM 2301: Organic Chemistry I (3 credits lecture)**

**CHEM 2302: Organic Chemistry II (3 credits lecture)\***

**CHEM 2311: Organic Lab (4 credits lab)\***

\*Not required by some CBS majors but may be required by some health professional school programs to fulfill prerequisites.

At the end of this sequence, students obtain **18 credits of General Chemistry through Organic Chemistry.**

Regardless of which sequence is selected, students from the College of Biological Sciences then go on to complete the following at a minimum\*\*:

**BIOL 3020 - Molecular Biology and Society (3 credits lecture):**

An innovative new course required of all CBS students that focuses on the central dogma of cellular processes, as well as how the implications of cellular technology play out in society.

**BIOC 3022 - Biochemistry for the Life Sciences (3 credits lecture):**

Designed as the fourth semester after the three-semester chemistry sequence, our re-envisioned biochemistry course capitalizes on the knowledge built in the sequence to teach more in-depth and cutting edge biochemistry as relates to the life sciences. This course provides an introduction to biochemistry including discussion of the structure and functions of biomolecules (proteins, carbohydrates, lipids, and nucleic acids), central metabolic pathways, and the mechanisms of enzyme action. This course is for students in the College of Biological Sciences who are also completing BIOL 3020.

\*\*Biochemistry majors also complete additional advanced biochemistry coursework.

**4. Can students switch between the two chemistry course sequences?**

**Answer:** Students are only able to switch between the two chemistry course sequences after the first course in each sequence (CHEM 1061 or CHEM 1081). However, after a student completes CHEM 1062 **or** CHEM 1082, students are no longer able to easily switch between the sequences. The second semester coursework varies significantly between the sequences so much that the courses are not deemed equivalent. If you have further questions about this, please contact an academic advisor.

**5. Does completing the Chemistry for the Life Sciences course sequence versus the Traditional sequence affect my competitiveness for health professional school?**

**Answer:** In CBS's outreach to health professional schools and programs to educate them about CBS's new chemistry curriculum, no school or program that indicated they would accept this sequence to fulfill their prerequisites indicated that they would prefer one chemistry course sequence over the other. Some health professional schools and programs did indicate that they would like students to complete additional chemistry coursework to meet their prerequisites, and possible course options are discussed in more detail later in this guide.

Because competitiveness for health professional school is based on a variety of factors, the difference between fulfilling prerequisites one way versus another way has much less of an impact on applicant's competitiveness versus overall grade trends and entrance exam scores when assessing a candidate's academic metrics. Furthermore, academic metrics are only one part of an individual's competitiveness; a CBS Career Coach is happy to meet with students to talk about how health professional schools assess competitiveness from a holistic point of view.

## **6. How many health professional schools across the country accept the sequence to fulfill their prerequisites?**

**Answer:** Upon review of the Chemistry for the Life Sciences course sequence, the University of Minnesota Medical School, College of Pharmacy, College of Veterinary Medicine, Genetic Counseling Program, Doctor of Physical Therapy (DPT) Program, and Medical Laboratory Sciences (MLS) Program have agreed that they will accept the Chemistry for the Life Sciences series to satisfy their chemistry course prerequisites, and they have all provided CBS with written documentation of this agreement.

The University of Minnesota Dental School will require its DDS applicants to complete one additional chemistry course to fulfill its prerequisites.

CBS reached out to numerous health programs across the country to share its new chemistry sequence and determine how programs would assess the Chemistry for the Life Sciences course sequence to fulfill prerequisites. Based upon communication received and program prerequisite review, the Chemistry for the Life Sciences course sequence will fulfill general and organic chemistry prerequisites for the majority of medical schools, osteopathic medical schools, veterinary medicine programs, physician assistant programs, genetic counseling programs, and optometry programs.

Many pharmacy and dental schools also communicated that this sequence would fulfill their prerequisites, but some did indicate they would like students to complete additional coursework if they choose the Chemistry for the Life Sciences course sequence instead of the Chemistry 1061 (Traditional) course sequence.

A detailed overview of information about specific health professional schools and programs, as well as application tips related to Chemistry for the Life Sciences, can be found at [z.umn.edu/cbschemistrysupport](https://z.umn.edu/cbschemistrysupport).

## **7. Where can I find more information about information about the Chemistry for the Life Sciences course sequence and information about how it might relate to my future application to health professional schools?**

**Answer:** Students may visit [z.umn.edu/cbschemistry](https://z.umn.edu/cbschemistry) to see syllabi for each of the courses in the Chemistry for the Life Sciences course sequence.

Students may also visit [z.umn.edu/cbschemistrysupport](https://z.umn.edu/cbschemistrysupport) to learn additional information about how completing the Chemistry for the Life Sciences course sequence relates to applying to health professional school. On this page, the following is available:

- A summary of CBS outreach to different health professional schools and programs across the country and these programs' responses to CBS's chemistry sequence with regards to fulfillment of program prerequisites
- A copy of these FAQs
- More information on how completing Chemistry for the Life Sciences relates to applying to health professional school in the future, as well as application tips and resources
- Information about who to contact about questions not answered in these FAQs