Curriculum Map and Course Information for Chemistry Majors

The information below outlines the sequence of required **chemistry** courses for a typical chemistry major. AP credits or changing majors may have you on a different track. Please feel free to contact the chemistry advisor (Dr. Goodenough, dgoodeno@nd.edu) if you have questions or concerns about what courses you should take.

Students who are interested in study abroad options should see Dr. Goodenough a as soon as you know where you would like to go. It just requires some extra planning and rearrangement of a few of your science courses. The sooner we start planning out your schedule, the easier it will be to open up the semester you want to be abroad.

Freshman Year

Fall Semester

CHEM 10181/11181
Introduction to Chemical Principles (with lab)
MATH 10550
Calculus I
PHYS 10310/11310
Physics I (with lab)

Spring Semester

CHEM 10182/11182
Organic Structure and Mechanisms (with Lab)
MATH 10560
Calculus II
PHYS 10320/11320
Physics II (with lab)

Sophomore Year

Fall Semester

CHEM 20283/21283
Organic Reactions and Applications (with lab)
CHEM 23201
Chemistry Seminar (one with Thurston Miller)

Spring Semester

CHEM 20284/21284
Chemistry Across the Periodic Table (with lab)
CHEM 20262
Mathematical Methods

Junior Year

Fall Semester

CHEM 30333/31333
Analytical Chemistry (with lab; or Spring Semester)
CHEM 30321
Physical Chemistry I (no lab)
CHEM 23203 (CHEM 23202 in Spring Semester)
Junior Chemistry Seminar (or Spring Semester)

Spring Semester

CHEM 30322/31322
Physical Chemistry II (with lab)
CHEM 40420
Principles of Biochemistry (no lab; or Senior Year)

Senior Year

Fall Semester

CHEM 40443/41443
Advanced Inorganic Chemistry (with lab)
CHEM 23203 (CHEM 23202 in Spring Semester)
Senior Chemistry Seminar (or Spring Semester)

Spring Semester

CHEM 40434 or 40436
Physical Methods or Instrumental Methods (no lab)

Freshman Year Notes:

- If you arrived with AP credit for physics (PHYS 10310/10320) and you are considering a pre-professional tract, then you may want to take physics during your freshman year (PHYS 10310/11310 fall, 10320/11320 spring) – for those medical schools which require physics be taken in college. If you know that you are not going the pre-professional route, then you may wish to accept the AP credit and take other courses.
- You are not required to use your Calc I/II AP credits. There is some value in seeing this course content at a college level. **Do not take Calc III unless you are planning to double major in math.** CHEM 20262 is the course that fulfills our math requirement. It is not advised that you take this course early. It is best to take CHEM 20262 the spring semester before you start physical chemistry.

Sophomore Year Notes:

- If you are pre-professional and have not already taken the introductory biology courses, sophomore year is a good time to take them (Fall: BIOS 20201/21201; Spring: BIOS 20202/21202).
- If you are interested in study abroad or a combination program, consider taking analytical chemistry (CHEM 30333/313333) during the spring of your sophomore year. There are no prerequisites for this class so it can be taken at any level.
- If you are interested in medical or professional school, connect with the pre-professional advisors, think about volunteer activities, and other ways to learn about medicine or your anticipated field of study.

Junior Year Notes:

- Check you GPS and see Dr. Goodenough if there are issues with any chemistry credits. Remember that you need 6 credits in science electives by the end of your senior year. CHEM48498 Undergraduate Research is strongly recommended to satisfy these electives.
- CHEM30333/31333 - Analytical Chemistry is offered in both the fall and spring semesters. Chemistry and biochemistry majors are encouraged to take it during the spring semester. Also note, the laboratory can be taken concurrent with the lecture or subsequent to completion of the lecture.
- If you are interested in teaching, there are jobs in the undergraduate labs and first-year tutoring programs.
- If you are interested in medical or professional school, you should also consider taking CHEM40420 by the end of the junior year in preparation for the MCAT and other professional entrance exams.
- If you are interested in the Honors in Chemistry and Biochemistry Program, make sure to apply this year (see the requirements below).

Senior Year Notes:

Please double check your GPS and make sure that all the classes you believe are being counted are showing up correctly. Make sure to sketch out both semesters to ensure that you are able to fulfill all of the university and departmental requirements during the remaining two semesters.

- If graduate school is a possibility for you, register for the GRE and subject tests in the fall semester (subject tests are only offered on specific dates, so pay attention to deadlines for registration for those exams).

Chemistry Research Notes:

If you are interested in research, the sophomore year is a great time to talk with the research faculty and choose a lab. Many faculty expect you to stay for one summer to work on your research project and there are a number of funding opportunities to support your summer work. You must be registered for CHEM48498 to receive credit for research. You can receive up to 3 credits per semester. The general guideline is a commitment of 4 hours per week per credit. Exact expectations should be discussed with the research advisor you choose. Contact Dr. Goodenough (dgoodeno@nd.edu) for research overrides.

Honors in Chemistry and Biochemistry Program Criteria and Requirements

- You must have an overall GPA of 3.50 or higher.
- You must apply to the Director of Undergraduate Studies by the end of the first week of classes during the fall or spring semester of the junior year.
- You must complete a minimum of two semesters of CHEM48498 (or another approved research course in the College of Science) **after being admitted** into the Honors Program. Data from previous semester of research can be included in your thesis, but you must participate in research for at least two semesters during your junior or senior years, and following acceptance into the program.
- Once you are ready to write up your thesis you should enroll in CHEM48500 (Research Thesis in Chemistry or Biochemistry) – see Dr. Goodenough for the course override. You can take CHEM48500 concurrent with CHEM418498. To receive honors you must achieve a grade of B or higher in CHEM48500.