

Suggested Course Schedule for Biochemistry Majors

The information below outlines the sequence of required **science** courses for a typical biochemistry major. AP credits or a change of majors may have you on a different track. Please feel free to contact the biochemistry advisor (Dr. Goodenough, dgoodeno@nd.edu) if you have questions about what courses you should take. **Note:** *Students who are interested in study abroad options should see Dr. Goodenough as soon as you know where you would like to go. Studying abroad 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 - (16 credits minimum - 18 credits **maximum** recommended load each semester)

Fall	CHEM 10181/11181	Intro to Chemical Principles (with lab)
	BIOS 10171/11173	Biology I: Big Questions (with lab)
	MATH 10550	Calculus I
Spring	CHEM 10182/11182	Organic Structure and Mechanism (with lab)
	BIOS 10172/11174	Biology II: Molecules to Ecosystems (<i>lab optional*</i>)
	MATH 10560	Calculus II

Additional Notes:

- CHEM 20262 provides a broad survey of the mathematics required for Physical Chemistry, so it is best to take this class during the spring semester before you start the Physical Chemistry sequence. If you are considering a double or supplemental Mathematics or ACMS major, CHEM 20262 *may* be replaced with Calc III + Intro to LinearAlgebra / Differential Equations.
- You are not required to use Calc I/II AP credits, and there is value in seeing this content at a college level. If you really enjoy math or are considering studying it further, you may want to consider taking Calc III instead of repeating Calc I/II.
- Although it is optional for the biochemistry major, students on a pre-professional track should take the BIOS 11174 lab course.

Sophomore Year

Fall	CHEM 20283/21283	Organic Reactions and Applications (with lab)
	CHEM 23201	Chemistry Seminar (one with Thurston Miller)
	CHEM 23212	Biochemistry Seminar
	PHYS 20210/21210	Physics for Life Sciences I (with lab)
Spring	CHEM 20284/21284	Chemistry Across the Periodic Table (with lab)
	CHEM 20262	Mathematical Methods
	PHYS 20220/21220	Physics for Life Sciences II (with lab)

Additional Notes:

- If you have not already taken the introductory biology courses, you must complete them during your sophomore year (BIOS 10171/11173 fall, 10172/11174 spring).
- If you arrived with AP credit for physics (PHYS 10310/10320) and you are considering a pre-professional track, note that some medical schools require physics to be taken in college. Therefore, you may want to retake physics during your freshman year (PHYS 20210/21210 fall, 20220/21220 spring). If you know that you are not going the pre-professional route, then you may accept the AP credit and take other courses instead.
- After completing CHEM 23201, you will need to take two more chemistry seminars – CHEM 23202 (offered in the spring) or 23203 (offered in the fall). Only one may be taken per semester, but they may be taken at any time.
- If you are considering study abroad and have not already done so, please see Dr. Goodenough.

(Sophomore notes continued on back)

- If you are interested in medical or professional school, sophomore year is the time to connect with the pre-professional advisors, to think about volunteer activities and other ways to prepare you for medical school.
- If you are interested in research, the sophomore year is also a great time to talk with the faculty and to find a lab that matches your interests. You must be registered for CHEM 48498 (or an equivalent course in another department) to receive credit for research. Students typically enroll in 1-2 credits of research, depending on time commitments to other classes. Exact expectations should be discussed with the research advisor you choose. Contact Dr. Steven Wietstock (swietsto@nd.edu) for research overrides.

Junior Year

Fall CHEM 30341/31341 Fundamentals of Biochemistry (with lab)
BIOS 30341 Cell Biology (*lab optional**)

Spring CHEM 30342 Intermediary Metabolism (**no lab**)
CHEM 30338 Physical Biochemistry
BIOS 20303/21303 Fundamentals of Genetics (*lab optional**)

** In addition to the courses and requirements listed above, biochemistry majors must complete **two additional science credits**. One of these credits **must** be a laboratory credit that can be fulfilled with cell biology lab (BIOS 31341), genetics lab (BIOS 21303) or any other upper level biology lab course. This lab requirement may also be fulfilled by completing two credits of research under the direction of a single faculty mentor. Students interested in proceeding on to graduate school would benefit from taking the cell bio and/or genetics labs in addition to working in a research laboratory.*

Honors in Chemistry and Biochemistry Program Criteria and Requirements

- You must have an overall GPA of 3.50 or higher.
- You should submit your application to the Director of Undergraduate Studies during your 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.
- In your last semester, you should enroll in CHEM48500 (Research Thesis in Chemistry or Biochemistry) – see Dr. Wietstock for the course override. You can take CHEM48500 concurrent with CHEM48498. To receive honors you must achieve a grade of B or higher in CHEM48500.

Senior Year

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

Fall CHEM 50531 Molecular Biology I

Spring CHEM 30333/31333 Analytical Chemistry (with lab)

Additional Notes:

Analytical chemistry is offered in both the fall and spring semesters. Chemistry and biochemistry majors are encouraged to take it during the spring semester. The laboratory course may be taken concurrently with the lecture, or after completion of the lecture course.