Formal coursework advances the student’s general knowledge and develops necessary expertise for the desired area of research. Our curriculum and courses provide modern instruction for graduate students with a wide range of research interests. The preparation and defense of research proposals is integral to the training. Effective communication of results is essential to scientific research.

A Ph.D. in Biochemistry must include:

a. 21 credits of graduate coursework by the end of the fourth semester (≥ 3.0 GPA overall)
b. 12 credits of Ph.D. research (BCHM 898 pre-candidacy, BCHM 899 post-candidacy)
c. Oral defense of a written research proposal and general biochemistry knowledge as part of advancement to candidacy
d. Presentation of a seminar and a research proposal in an area unrelated to the student’s or research director’s own work
e. Preparation and oral defense of a publication-quality dissertation that advances the field.

Courses: (a-e provide the 21 credits mentioned above)

a. 9 credits of required courses: at least a B must be attained in each of the three courses
b. 3 credits of Laboratory Rotations
c. 1 credit of Computational Tools in Biochemistry (BCHM 677), to be completed in the Winter term of the first year, though you sign up for it in fall of the second year. Biochemistry students do not take Chem 648X (Library course)
d. 6 credits of electives chosen among courses numbered 600 or higher, typically Biochemistry 669, 673, 676 or MOCB courses
e. 2 x 1 credit of seminar, BCHM 889, but attendance at all Tuesday at 11 seminars is expected throughout your career here
f. 2 credits of Independent Research Proposal (BCHM 669) taken during the fall of the 4th year

Typical Fall Semester 1st Year Courses:
- BCHM 671 (Protein Chemistry, 3 credits): required.
- BCHM 674 (Nucleic Acids, 3 credits): required
- BCHM 669 (Laboratory Rotations, 3 credits): required
- BCHM 889 (Seminar, 1 credit)

Typical Spring Semester 1st Year Courses:
- BCHM 675 (Biophysical Chemistry, 3 credits): required.
- Two electives (3 credits each) OR one elective (3 credits) and BCHM 898 (Research)
- BCHM 889 (Seminar, 1 credit)

Typical Fall Semester 2nd Year Courses:
- One elective course (3 credits), if only one elective was taken in the spring of the 1st year.
  - For example, Regulatory Networks, Mass Spec and Proteomics, Structural Methods
- BCHM 677 (Computational Tools in Biochemistry, 1 credit)
- BCHM 898 (Research)

Students must have completed 15 credits and have at least a 3.0 GPA at the end of the second semester.
Points of information:
1. Students on Teaching Assistantships are required to register for up to 10 credits/semester (pre-candidacy)
2. Students on Research Assistantships are required to register for 2 credits/semester (pre-candidacy)
3. Post-candidacy students will be registered automatically by the graduate school for 6 credits/semester.
4. If a student is asked to take undergraduate level Biochemistry (BCHM: 461, 462 or 465) in the fall semester of the 1st year, he/she will start laboratory rotations in the spring semester of the 1st year. 400-level biochemistry courses do not count toward the 21-credit course requirement.
5. If a student fails the UMEI English exam and is required to take an English course, he/she will start laboratory Rotations in the spring semester of the 1st year.
6. If the student is asked to take Physical Chemistry (Chem 481), he/she will start laboratory Rotations in the spring semester of the 1st year.
7. Entering students are advised about course selection by faculty in the Biochemistry group during graduate student orientation. Continuing students select graduate courses upon consultation with their Ph.D. advisors and mentoring committees.
8. Entering students who have performed graduate-level studies at other institutions may request a waiver of graduate course requirements through the biochemistry group. If it is approved at this level the request will be forwarded to the Associate Chair for final approval.

Laboratory Rotation and Research Advisor Selection Guidelines:
1. Shortly after the semester begins, there will be an afternoon/evening of research presentations to introduce the students to biochemical research in the division.
2. Each student will then be asked to rank five Professors chosen from a list provided. The biochemistry group will assign each student to three rotations from the list.
3. Students will do three laboratory rotations of ~4 weeks each, starting after Labor Day and ending in December. Specific dates will be provided.
4. On December 15 the student will turn in his/her ranked list of three desired research advisors, which may include laboratories that were not among the rotation labs.
5. By January 15 (or earlier) the student will be notified of the assignment of his/her advisor.

Advancement to Candidacy, Independent Research Proposal, and Dissertation Defense. Note: These brief descriptions are not authoritative. More detail will be provided.
Typically students take candidacy examinations in May of the second year. These are oral defenses of a written research proposal describing the student’s Ph.D. work. The oral exam also includes general biochemistry. The Thesis Advisory committee (4 Chem and Biochem faculty members plus a Dean’s representative from another department) conducts the exam.

The independent research proposal is done in the fall of the fourth year. The student presents a departmental seminar on an area of current interest in biochemistry, not related to her/his own work. He/she then prepares a research proposal in the area and defends it before the Thesis Advisory Committee.

The student will meet with his/her Thesis Advisory Committee once during the third year, once before the dissertation is prepared, and in addition at least once every year after the fourth year. These meetings are intended to ensure that adequate progress is being made toward the Ph.D. Ordinarily the Ph.D. should be defended during the student’s fifth year.