

MASTER OF SCIENCE IN BIOCHEMISTRY

Department: Chemistry and Biochemistry (<https://catalog.bradley.edu/graduate/liberal-arts-sciences/chemistry-biochemistry/>)

General MS Admission Requirements

In addition to the admission requirements of Graduate Education, the applicant shall have a bachelor's degree in chemistry, biochemistry, or a related field and shall have completed one year each of college-level calculus and physics. Successful applicants typically have achieved a cumulative GPA of 3.0 or better in a 4.0 scale in the last 60 hours of undergraduate course work, a cumulative GPA of 2.75 in undergraduate chemistry courses, and a C or better in each of the following courses and their accompanying labs: general chemistry, organic chemistry (two semesters), and analytical chemistry (one semester). A maximum of six credits may be transferred into the program from an accredited graduate program.

General MS Program Requirements

- Candidates for the M.S. degrees must complete a minimum of 31 graduate credits in chemistry and related subjects.
- Program participants are expected to engage in full-time research experiences during the summers.
- All matriculated graduate students (except those requiring a leave of absence) are required to be registered for at least one course for each fall and spring semester and one course during each summer from the semester of matriculation through the semester in which the degree is completed.
- Students must identify a research mentor and begin their research in the first semester in which they are enrolled. If the research mentor is from the graduate faculty of the Department of Chemistry and Biochemistry, the mentor also serves as the thesis advisor.
- If approved by the department chair and the graduate coordinator, the student may conduct research with a scientist (off-campus or on-campus) who is not a member of the department's faculty. In that case, a member of the department's graduate faculty must serve as the thesis advisor.
- During the first semester of study, the student's thesis committee shall be constituted. The committee shall be composed of at least three voting members, chosen in consultation with the student, the thesis advisor, and the graduate coordinator. The committee shall include the thesis advisor and at least two other members from the department. If a research mentor from outside the department is directing the student's research, the research mentor is an ex officio, non-voting member of the committee.
- The department's graduate coordinator and the student's thesis advisor must approve a Graduate Program of Study within three months after the start of graduate study.
- Before completing six credit hours of research, the student must present a seminar (CHM 580 Literature Seminar in Chemistry & Biochemistry) that summarizes the literature relevant to the thesis project, outlines the proposed research, and presents any preliminary data. Following the seminar, the student must meet with the thesis committee to discuss the presentation and the research plan.
- Upon completion of the thesis, the student must present the work in a public research seminar and successfully defend the thesis to the

thesis committee (CHM 699 Thesis, 1 credit). The voting members of the thesis committee shall determine the CHM 699 Thesis grade and decide when a thesis has satisfactorily met all standards.

- In addition to the general admission requirements above, students must have satisfactorily completed (B or better) one semester of biochemistry, with laboratory, at the undergraduate level.
- The required 31 semester hours must include the courses listed below. The graduate coordinator will review the transcript of each student to ensure that students do not repeat courses they have already completed (C or better) at the undergraduate level.

| Code | Title | Hours |
|---|--|--------------|
| Required Courses | | |
| CHM 520 or CHM 536 | Instrumental Analysis Inorganic Chemistry | 4.0 |
| CHM 524 | Fundamentals of Separation Science | 3.0 |
| CHM 562 | Protein Structure and Function | 3.0 |
| CHM 566 | Intermediary Metabolism | 3.0 |
| CHM 570 | Physical Chemistry I | 3.0 |
| CHM 580 | Literature Seminar in Chemistry & Biochemistry | 1.0 |
| CHM 697 | Research | 10.0 |
| CHM 699 | Thesis | 0.0-1.0 |
| Select elective courses to reach the 31.0 required hours ¹ | | 3.0 |
| Total Hours | | 30-31 |

¹ The remainder of the 31 required hours must be met by elective courses with no less than half of those credits coming from the biochemistry list below. Any remaining electives can be 500-level Chemistry courses (CHM) or up to six graduate credit hours from cognate fields. Cognate courses must be approved, prior to enrollment, by the thesis advisor, department chair, and graduate coordinator.

Biochemistry Electives

| Code | Title | Hours |
|---------|-----------------------------------|---------|
| CHM 564 | Biochemical Literature | 1.0-2.0 |
| CHM 568 | Selected Topics in Biochemistry | 1.0-3.0 |
| BIO 509 | Human Genetics | 3.0 |
| BIO 564 | Advanced Cell Biology | 3.0 |
| BIO 568 | Cellular and Molecular Immunology | 3.0 |