

CHEMISTRY AND BIOCHEMISTRY, PHD

Banner Code: SC-PHD-CBCM

Academic Advising

Email: cbgrad@gmu.edu

Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/graduate-programs

The program is intended to prepare students for advanced work in the chemical sciences and related areas. Graduates with the PhD in this field can seek employment in research and development, process control, or higher education. In addition to these traditional science career paths, graduates are also positioned to pursue careers in non-traditional areas such as the intellectual property and regulatory fields. The program is designed to provide students with a firm foundation in advanced coursework, which is followed by an independent research project completed under the guidance of a faculty advisor. The culmination of the program is a dissertation representing original research that is publishable in a peer-reviewed scientific journal.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies (<http://catalog.gmu.edu/admissions/graduate-policies/>) section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (<https://www2.gmu.edu/admissions-aid/apply-now/>).

To be considered for admission to degree status, students must have a bachelor's and/or master's degree in chemistry, biochemistry, or a related field and must meet general admission requirements for graduate study as specified in Graduate Admission Policies (<https://catalog.gmu.edu/admissions/graduate-policies/>). Applicants with a bachelor's degree in other fields of study who have at least three years of chemistry or biochemistry coursework may be accepted into the program. In some cases, students may be accepted provisionally and will be required to successfully complete the selected remedial courses, some of which may not be applicable toward the doctoral requirements.

Admission is based upon a departmental evaluation of the applicant's background as evidenced by transcripts, résumés, and letters of recommendation.

The GRE requirement for the PhD program is waived for students with a master's degree in chemistry, biochemistry, or a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent degree.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>).

Academic Advising

Upon acceptance into the Chemistry and Biochemistry, PhD, a student will be assigned an academic advisor. Prior to registering for classes,

students are required to meet with their academic advisor who will provide guidance in selecting courses that are consistent with the student's area of interest. Once a student has selected a research/dissertation advisor, that person then assumes the role of providing academic advisement to the student.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the associate dean for student affairs. See AP.6.5.2 Reduction of Credits (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-5-2>) for more information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Code	Title	Credits
Core Courses		
CHEM 817	Organic Structural Spectroscopy	3
CHEM 833	Physical Chemistry and Biochemistry	3
Seminar		
CHEM 790	Graduate Seminar (taken three times)	3
Electives		
Select 39 credits of approved elective courses in consultation with the student's advisor		39
Total Credits		48

Dissertation Committee and Supervisor

By the end of the first year, a student in the program is expected to have selected a dissertation/research supervisor and to have formed the dissertation committee. This committee will consist of at least four graduate faculty members (including the dissertation supervisor), with at least two members from the Department of Chemistry and Biochemistry. At least one member must be from outside the department. Qualified individuals who are not members of the graduate faculty, including faculty at other universities or government laboratories, may serve on the committee with the approval of the department chair and the college's associate dean.

Candidacy Examinations

The student must successfully complete separate written and oral candidacy examinations prepared and administered by the Dissertation Committee. The written exam consists of questions submitted by the Dissertation Committee. Successful completion of the written exam should be followed by the oral portion within one month. The oral exam consists of questions submitted by each member of the Dissertation Committee. Either or both portions of the qualifying exam may be

repeated once at the discretion of the Dissertation Committee. A student must satisfactorily pass the two portions of the exam by the end of the third year from the date of enrollment in the PhD program.

Dissertation Proposal and Advancement to Candidacy

Prior to completing the sixth semester in the program, a student is expected to have advanced to candidacy. The student's committee will determine whether a candidate is ready to begin preparation of the research proposal and approve enrollment in CHEM 998 Doctoral Dissertation Proposal based upon their familiarity with the student's progress.

In order to advance to candidacy in a given semester, a student is required to fulfill the following requirements:

- The student will prepare and submit a research proposal (based on the thesis research) for approval by the dissertation committee.
- The student must pass a written qualifying exam prepared by the dissertation committee. The exam can be based on the student's research and/or completed coursework, with the composition of the exam being determined by the student's dissertation committee.
- The final stage is an oral defense of the student's research proposal. Questions at the proposal defense may also be drawn from material covered in the written qualifying exam.

In order the advance to candidacy in a given semester and register for CHEM 999 in the following semester, students must submit the requested documentation to the Department Graduate Coordinator by the following deadlines:

- To advance in the fall and register for CHEM 999 Doctoral Dissertation Research in the spring, November 8.
- To advance in the spring and register for CHEM 999 Doctoral Dissertation Research in the summer, March 8.
- To advance in the summer and register for CHEM 999 Doctoral Dissertation Research in the fall, May 25.

Dissertation Research

No more than 24 combined credits from CHEM 998 Doctoral Dissertation Proposal and CHEM 999 Doctoral Dissertation Research may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of CHEM 998 Doctoral Dissertation Proposal.

Code	Title	Credits
Select 24 credits from the following:		24
CHEM 998	Doctoral Dissertation Proposal (maximum of 12 credits)	
CHEM 999	Doctoral Dissertation Research	
Total Credits		24

Exit Seminar

Each PhD candidate presents his or her research in a seminar in the Department of Chemistry and Biochemistry (a departmental seminar), which takes place in the same semester as the final defense of the dissertation (below).

Dissertation Research and Defense

With the approval of the dissertation committee, the student will enroll in CHEM 998 Doctoral Dissertation Proposal and CHEM 999 Doctoral Dissertation Research. The dissertation research should represent a significant contribution to the appropriate scientific field(s), and it should

be deemed to represent a body of work that is publishable in a refereed scientific journal. The dissertation must be presented and defended in a public forum consisting of the dissertation committee and other interested members of the George Mason University community.