

# CHEMISTRY, PHD

The Department of Chemistry and Biochemistry offers a graduate program of studies with a choice of areas of specialization in analytical, organic, inorganic and physical chemistry or in biochemistry. The student is expected to develop breadth of study beyond the boundaries of traditional areas and disciplines. The student is afforded the opportunity of interdisciplinary study in the Surface Studies Laboratory and in the Center for Great Lakes Studies.

## Admission Requirements

### Application Deadlines

Application deadlines vary by program, please review the application deadline chart (<http://uwm.edu/graduateschool/program-deadlines/>) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (<https://uwm.edu/onestop/dates-and-deadlines/>).

### Admission

The Ph.D. in Chemistry is divided into two tracks for the purpose of admission. This bifurcation is an acknowledgement of the highly interdisciplinary nature of modern research and that success in biochemical research often benefits from different background knowledge than would be necessary for other areas of chemistry. An applicant for the Chemistry Ph.D. program must meet all Graduate School requirements *plus* the requirements of the Chemistry or Biochemistry track to be considered for admission:

#### Chemistry Track

The Chemistry Track is designed for undergraduate chemistry majors pursuing research in Analytical Chemistry, Chemistry Education, Inorganic Chemistry, Organic Chemistry, or Physical Chemistry.

- Undergraduate preparation in chemistry that includes at least two courses each of physical and organic chemistry with associated laboratories, and one course each in analytical and inorganic chemistry.

#### Biochemistry Track

The Biochemistry Track is designed for undergraduate biochemistry (or similar) majors pursuing research in biochemistry, chemical biology, or related fields.

- Undergraduate preparation in biochemistry that includes at least two courses each of biochemistry and organic chemistry with associated laboratories, and one course in each of two of the following areas: analytical, inorganic, or physical chemistry.

A master's degree is not a prerequisite for admission to the Ph.D. program in chemistry. Applicants may be admitted with specific program-defined course deficiencies provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements within three enrolled semesters. The deficiencies are monitored by the individual graduate program unit. No course credits earned in making up deficiencies may be counted as program credits required for the degree.

## Reapplication

A student who receives the master's degree must formally reapply for admission to the Graduate School before continuing studies toward the PhD.

## Credits and Courses

Minimum degree requirement is 54 graduate credits beyond the bachelor's degree, at least 27 of which must be earned in residence at UWM. The student plans an individual program of study in consultation with the major professor.

Code	Title	Credits
<b>Minimum Requirements</b>		
At least six 600- to 899-level courses		18
Research courses		28
CHEM 912 Graduate Seminar (audit each semester and graded once)		8
<b>Total Credits</b>		<b>54</b>

Coursework must include one of the following:

- a minor of 9 to 12 credits in a single department;
- a minor of 9 to 12 credits in two or more departments;
- a coherent program of at least 9 credits concentrated in an area of chemistry outside the student's principal area of emphasis.

A Program of Study, including coursework and proposed research, must be approved by the Department. A minimum grade point average of 3.00 must be earned in coursework in Chemistry, not including research (CHEM 900-CHEM 996) or seminars (CHEM 912-CHEM 935). Graduate School regulations require that a majority of all courses taken be at the 700-999 level.

The Department has no formal language requirement but the student is responsible for familiarity with published literature in the area of that student's research.

The student must also participate in at least one semester of part-time teaching as a teaching assistant. The first stage of the student's program includes general preparation as in the master's program, as well as specialized courses in principal areas of interest and the initiation of research.

Admission to the second stage of the PhD program is based upon satisfactory performance in courses, research, and in departmental examinations. Upon entrance, the student takes proficiency examinations in analytical, inorganic, organic, and physical chemistry. Departmental approval to continue in the doctoral program is attained by passing an advanced qualifying examination in the major area. This examination must be completed by the end of the fourth semester of study. In the second stage of the program, the student concentrates on the development and execution of original research. Additional coursework may also be required to complete the program of study.

## Additional Requirements

### Professor as Advisor

The student must have a major professor to advise and supervise the student's studies as specified in Graduate School regulations. The entering student is assigned a temporary advisor; a permanent advisor

must be selected by the end of the first semester of study. The major professor serves as the student's research mentor.

## **Residence**

The student must meet minimum Graduate School residence requirements (<http://uwm.edu/graduateschool/doctoral-requirements/#residence>).

## **Doctoral Preliminary Examination**

The student must take a doctoral preliminary examination. This serves to qualify the student for formal admission by the Graduate School to candidacy for the degree.

## **Dissertation**

Candidates must each present a dissertation reporting the results of independent, original research carried out under the direction of their major professor. At least three months before the Dissertation Defense, at a time when most of the experimental work has been completed, the student meets with the Examining Committee for a preliminary review of the research to be described in the dissertation.

## **Dissertation Defense**

The candidate must, as the final step toward the degree, defend the dissertation in an oral examination. The candidate also presents a public dissertation seminar, describing research in completed form for the Department and others who may be interested. A student who does not pass this examination within five years of admission to candidacy may be required to take another preliminary examination and be readmitted to candidacy.

## **Time Limit**

All degree requirements must be completed within 10 years from the date of initial enrollment in the doctoral program. For additional information view the Graduate School PhD requirements (<http://uwm.edu/graduateschool/doctoral-requirements/>).