

# PH.D. IN CHEMISTRY

## Overview

The Department of Chemistry offers the Doctor of Philosophy (Ph.D.) degree. In order to receive the Ph.D. degree, students must fulfill a combination of requirements that consist of taking courses, presenting and attending seminars, passing an oral comprehensive examination, submitting and defending a research proposal and submitting and defending a thesis based on original research.

## Admission Requirements

The candidate must hold a B.S./B.A. degree from an accredited institution. Consideration is given to applicants who have successfully completed general chemistry (two semesters), organic chemistry (two semesters), physical chemistry (two semesters), and the related laboratories. A course in advanced inorganic chemistry is strongly recommended, and remedial work in this area may be required of students who have not taken such a course. The mathematics and physics courses that are normally included in a B.S. program in chemistry are also required. An official transcript is required from each college or university attended. If foreign credentials are not in English, they must be accompanied by certified translations

Three Recommendation Letters

Official GRE Score Reports

Official Test of English as a Foreign Language (TOEFL) score reports

## Curriculum Requirements

The general requirements for the **doctorate** in Chemistry are set forth in this *Bulletin* under the heading Doctor of Philosophy. The Department of Chemistry has the following specific requirements:

The PhD degree requires a minimum of 60 credit hours. The department will cover tuition costs up to 60 credit hours for students on assistantships and fellowships.

Code	Title	Credit Hours
CHM 600 level or Higher Electives		18
CHM 779	Chemistry Seminar	4
CHM 780	Chemistry Seminar	1
CHM 785	Introduction to Research	2
CHM 788	Problems in Research Planning	2
CHM 830	Doctoral Dissertation	26
CHM 840	Post-candidacy Dissertation	6
CHM 880	Doctoral Dissertation Seminar	1
<b>Total Credit Hours</b>		<b>60</b>

Students must take 18 credits of formal lecture courses by the end of the spring semester of their first year. Of the 18 credit hours, 4 core courses totaling 12 credit hours should be taken by all graduate students.

## Suggested Plan of Study

Year One		Credit Hours
<b>Fall</b>		
CHM courses 600 level		9
CHM 779	Chemistry Seminar	1
CHM 785	Introduction to Research	2
	<b>Credit Hours</b>	<b>12</b>
<b>Spring</b>		
CHM 600 level courses		9
CHM 779	Chemistry Seminar	1
	<b>Credit Hours</b>	<b>10</b>
<b>Year Two</b>		
<b>Fall</b>		
CHM 779	Chemistry Seminar	1
CHM 830	Doctoral Dissertation	6
	<b>Credit Hours</b>	<b>7</b>

<b>Spring</b>		
CHM 779	Chemistry Seminar	1
CHM 830	Doctoral Dissertation	4
<b>Credit Hours</b>		<b>5</b>
<b>Year Three</b>		
<b>Fall</b>		
CHM 780	Chemistry Seminar	1
CHM 830	Doctoral Dissertation	6
<b>Credit Hours</b>		<b>7</b>
<b>Spring</b>		
CHM 788	Problems in Research Planning	2
CHM 830	Doctoral Dissertation	4
<b>Credit Hours</b>		<b>6</b>
<b>Year Four</b>		
<b>Fall</b>		
CHM 830	Doctoral Dissertation	6
<b>Credit Hours</b>		<b>6</b>
<b>Spring</b>		
CHM 840	Post-candidacy Dissertation	6
CHM 880	Doctoral Dissertation Seminar	1
<b>Credit Hours</b>		<b>7</b>
<b>Total Credit Hours</b>		<b>60</b>

- The required number of credit hours in the *chemistry seminar* (CHM 779) must be taken in the first and second year.
- The required number of credit hours in Introduction to Research (CHM 785) must be taken in the first year.
- The required number of credit hours in the *chemistry seminar* (CHM 780) must be taken in the fall semester of the third year.
- The required number of credit hours in *Pre-candidacy Doctoral Dissertation* (CHM 830) must be taken in the first, second, third and fourth year.
- The required number of credit hours credits in *Post-candidacy Doctoral Dissertation* (CHM 840) must be taken in the fourth year.
- An *Oral Comprehensive Exam* must be passed before the end of the spring semester of the second year.
- An original *research proposal in Problems in Research Planning* (CHM 788) must be presented and defended before the end of the spring semester of the third year.
- A *Doctoral Dissertation* (CHM 880) based on research of a quality acceptable for publication in a recognized scientific journal must be completed before the end of the fifth year.

## Mission

As one of the core sciences, Chemistry has always been of the utmost importance in inventing new technology and ensuring that our nation remains at the forefront of scientific advances in energy, medicine, agriculture, environmental issues, and nanotechnology. The Ph.D. program at the University of Miami is committed to interdisciplinary interactions with research partners in all scientific and technological areas, thereby enriching the educational opportunities of the graduate students in the Department of Chemistry. We strive to deliver a high quality classroom-based instructional experience to provide our students with a broad knowledge base in the field, and, at the same time, allow for specialization in select topics to advance student understanding. By combining this instructional effort with a cutting-edge research program, our mission is to provide chemistry graduate students with a modern educational experience for future careers in all areas of the field, including academic, governmental, and industrial positions.

## Student Learning Outcomes

- Graduates will be able to demonstrate a broad understanding of chemical principles in all areas of the science.
- Graduates will be able to demonstrate a significant understanding of chemical instrumentation analysis methods, and laboratory techniques.
- Graduates will exhibit advanced critical thinking skills and problem solving strategies as applied to chemical research.
- Graduates will exhibit advanced creative thinking skills and ability to design their own projects as applied to chemical research.
- Graduates will be able to clearly and effectively communicate scientific results.
- Graduates will be able to clearly and effectively communicate scientific results, and demonstrate mastery in the area they are specializing in.