**Chemistry**

**Doctor of Philosophy (Ph.D.) Degree**

**DEGREE INFORMATION**

**Priority Admission Application Deadlines:**

**Fall:** December 5

**Spring**: August 15

International applicant deadlines:

<http://www.grad.usf.edu/majors>

**Minimum Total Hours:** 72 (Post-Baccalaureate)

42 (Post-Master’s)

**Level:** Doctoral

**CIP Code:** 40.0501

**Dept. Code:** CHM

**Major/College Codes:** CHM AS

**Approved:** 1971

**CONTACT INFORMATION**

**College:** Arts and Sciences

**Department:** Chemistry

**Contact Information:** [www.grad.usf.edu](http://www.grad.usf.edu)

**Other Resources:** http://chemistry.usf.edu/graduate

**MAJOR INFORMATION**

The Department of Chemistry offers Doctor of Philosophy, Master of Science, and Non-thesis Master of Arts degrees. The Chemistry graduate faculty is comprised of full-time senior faculty members, all holding the Ph.D. degree. The combination of a large and strong faculty with a wide variety of courses provides students with programs of study that can be tailored to fit individual needs, while maintaining a sound background in all general aspects of Chemistry. The excellent research facilities and very low student-faculty ratio combine to afford unique opportunities for advanced study in Chemistry.

**Major Research Areas:**

Research opportunities are available in such interdisciplinary and specialized areas as Analytical Chemistry, Chemical Education, Computer Modeling and Computational Chemistry, Drug Discovery and Delivery, Bioorganic and Bioinorganic Chemistry, Biophysical Chemistry, Electrochemistry, Environmental Chemistry, Enzymology, Inorganic Chemistry, Marine Chemistry, Medicinal Chemistry, Metal-Organic Framework Chemistry, Nanomaterials, Natural Products, Nucleic Acid Chemistry, Nuclear Magnetic Resonance, Organic Chemistry, Organocatalysis, Photochemistry, Physical Chemistry, Polymers, Spectroscopy, and Synthetic Organic Chemistry.

**ADMISSION INFORMATION**

Must meet University requirements (see Graduate Admissions), as well as requirements for admission to the major, listed below.

* A Bachelor of Arts or Bachelor of Science degree in Chemistry. Applicants with other degrees are considered on a case-by-case basis.
* A preferred minimum score of 149 V (430/800, 47th percentile) and 147 Q (470/800, 28th percentile) on the GRE (the Chemistry subject exam is not required).
* A minimum of a 3.00 grade point average (based on a 4.00 scale) in all undergraduate coursework, as verified by an official transcript from the applicant’s undergraduate institution.
* At least three letters of recommendation from people familiar with the student’s academic background.
* Applicants whose native language is not English must obtain at least a score of 79 on the Internet-based Test of English as a Foreign Language (TOEFL).

**CURRICULUM REQUIREMENTS**

**Total Minimum Hours – 72 credit hours (Post-Baccalaureate) 42 credit hours (Post-Master’s)**

*Core requirements – 9 credit-hours minimum*

*Additional Coursework – 61 (post-Baccalaureate) or 31 (post-masters) hours minimum*

*Dissertation – 2 credit-hours minimum*

**Core Requirements – 9 Credit Hours**

CHM 6935 6 Graduate Seminars in Chemistry

CHM 6978 3 Advanced Research in Chemistry

**Electives - 61 (Post-Baccalaureate) or 31 (post-masters)**

Students may select from graduate level courses in the Chemistry Department and/or related departments, such as Public Health, Education, Chemical Engineering, Physics, Biology, and Mathematics, with advisement of the student’s Supervisory Committee. Courses include, but are not limited to, the following:

[BCH](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5045) [5045](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5045) 3 credits [Biochemistry Core Course](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5045)

[BCH](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5105) [5105](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5105) 1-3 credits [Biochemistry Laboratory Rotations](http://ugs.usf.edu/course-inventory/?output=detail&subj=BCH&num=5105)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5225) [5225](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5225) 3 credits [Intermediate Organic Chemistry I](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=5225)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5226) [5226](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5226) 3 credits [Intermediate Organic Chemistry II](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=5226)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5452) [5452](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5452) 3 credits [Polymer Chemistry](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5452)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5621) [5621](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5621) 3 credits [Principles of Inorganic Chemistry](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5621)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5931) [5931](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5931) 1-3 credit(s) [Selected Topics in Chemistry](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=5931)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6036) [6036](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6036) 3 credits [Chemical Biology](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6036)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6150) [6150](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6150) 3 credits [Advanced Analytical Chemistry](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6150)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6235) [6235](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6235) 3 credits [Spectroscopic Analysis of Organic Compounds](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6235)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6250) [6250](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6250) 3 credits [Advanced Organic Chemistry I: Synthesis](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6250)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6263) [6263](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6263) 3 credits [Advanced Organic Chemistry II: Physical-Organic](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6263)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6279) [6279](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6279) 3 credits [Introduction to Drug Discovery](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6279)

[CHM](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6480) [6480](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6480) 3 credits Advanced Quantum Mechanics I[CHM](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6810) [6810](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6810) 3 credits [Methods of Instruction in Higher Ed Chemistry](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6810)

[CHM](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6811) [6811](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6811) 3 credits [Classroom Assessment Practices in Chemistry](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6811)

[CHM](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6907) [6907](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6907) 1-19 credit(s) [Independent Study](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6907)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6936) [6936](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6936) 1 credit [Chemistry Colloquium](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6936)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6938) [6938](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6938) 1-3 credit(s) [Selected Topics in Chemistry](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6938)

[CHM](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6945) [6945](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6945) 3 credits [Investigating Chemical Education Research in the United States](http://ugs.usf.edu/course-inventory/?output=detail&subj=CHM&num=6945)

[CHM](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6946) [6946](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6946) 1-4 credit(s) [Graduate Instruction Methods](https://www.systemacademics.usf.edu/course-inventory/?output=detail&subj=CHM&num=6946)

CHM 7820 varies Directed Research

**Qualifying Exam**

Students must successfully pass at least three of the five ACS undergraduate Chemistry proficiency exams in the subject areas of Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, and Physical Chemistry. A student may attempt each area exam three times and must score above the 50th percentile of national norms.

**Promotion to Candidacy**

Before the end of the third semester (excluding summers), the student should present to the Supervisory Committee a written document outlining the student’s research progress and future plans. This research summary is also to be presented orally to the committee. A successful defense results in the student being promoted to candidacy for the Ph.D. degree.

**Original Research Proposal (ORP) Examination**

An original research proposal must be written and defended before the end of the fifth semester (excluding summers), and after the student has already obtained Ph.D. candidacy.

**Research Data Presentation**

The student must give a research data presentation to his or her Dissertation Committee, preferably by the end of the fourth year (eight semesters, excluding summers), and at least one semester prior to the final oral thesis defense.

**Publication and Presentation Requirements**

The student must publish at least one peer-reviewed manuscript on his or her doctoral research topic, and make at least two presentations at a scientific meeting.

**Oral Defense of the Ph.D. Dissertation (Qualifying Exam)**

Upon completing all the research and other program requirements, the student will schedule a final oral defense of the written dissertation. This presentation is open to the public and will serve as the final comprehensive examination required by the *USF Office of Graduate Studies*.

**Dissertation (2 Credit Hours minimum)**

CHM 7980 2 credits *Dissertation*

*Students who take more dissertation hours may apply these toward the additional course requirements.*

**COURSES**

See <http://www.ugs.usf.edu/course-inventory/>