Doctor of Philosphy in Chemistry (BS Entry)

About This Program

The program leading to the Doctor of Philosophy degree in Chemistry is designed primarily to prepare doctoral-level chemists for industrial research careers. The student must:

1. demonstrate the ability to carry out independent research and
2. acquire the practical knowledge of the type of research conducted in industry and of the constraints (both practical and philosophical) under which such research is conducted.

The areas of research include analytical chemistry, biochemistry, bioinorganic chemistry, colloid and surface chemistry, electrochemistry, inorganic chemistry, medicinal chemistry, organic chemistry, organometallic chemistry, physical chemistry, polymer chemistry, and theoretical chemistry.

Competencies

1. Graduates will have a depth of knowledge, both factual and conceptual, in the field of their dissertation work and areas supporting that work.
2. Graduates will have a depth of understanding of experimental methods used for their data collection specifically with respect to the spectroscopic or other instrumental methods used in their research.
3. Graduates will have the necessary understanding of their discipline to be able to communicate orally with others in their field as well as the general scientific community.
4. Graduates will be able to plan and implement investigative procedures and formulate hypotheses.

Admissions Criteria

In evaluating candidates for admission to its graduate degree programs, the Department of Chemistry and Biochemistry emphasizes the preparedness of the student as evidenced by quality and quantity of coursework and the student's previous research experience. Recommendations from our own faculty, based on firsthand knowledge of the applicant or a faculty member at the applicant's institution, are also very important.

To be admitted to the PhD program, an applicant must satisfy the general admission requirements of the program and his or her academic record must show preparation for advanced work in chemistry. The department may waive specific course requirements for students who demonstrate successful completion of graduate coursework in chemistry on entry.

UNCONDITIONAL ADMISSION

Unconditional admission may be granted under any one of the following options. The minimum undergraduate GPA requirement for all options is 3.0, as calculated by Graduate Admissions.

OPTION 1

A satisfactory completion of a Bachelor's degree or equivalent, official transcripts, and GRE scores, and three letters of recommendation.

OPTION 2

A satisfactory completion of a Bachelor's degree or equivalent, official transcripts, and a letter of recommendation from a faculty member at the applicant's undergraduate institution, *plus a recommendation from a UT Arlington Chemistry and Biochemistry faculty member.*

OPTION 3

A satisfactory completion of a bachelor's degree or equivalent, official transcripts, and a letter of recommendation from a faculty member at the undergraduate institution, *plus a recommendation from a UT Arlington Chemistry and Biochemistry faculty member based on a face-to-face interview.*

LANGUAGE REQUIREMENTS

An applicant whose native language is not English must submit a TOEFL score of at least 550 or a score of at least 213 on the computer-based test. A TSE-A score of 45 or higher can be substituted for the TOEFL. Those who have completed their undergraduate education in English *may be eligible for a TOEFL waiver* based on the recommendation letters.

PROVISIONAL ADMISSION

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

PROBATIONARY ADMISSION

In rare cases, probationary admission may be granted as the result of a substandard performance on one or more of the admission criteria. In this case, the Graduate Advisor will set additional conditions for admission including, but not limited to, additional undergraduate coursework and/or achieving a B or better in the first 9 hours of graduate coursework.

DENIAL OF ADMISSION

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

ELIGIBILITY FOR SCHOLARSHIPS/FELLOWSHIPS

Students that have no provisional admission conditions to meet will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by Graduate Admissions, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships. (Students with graduate teaching or research assistantships, however, must be enrolled in a minimum of 9 hours of coursework in both long semesters and 6 hours of coursework in the summer sessions.)

Curriculum

Foundations		
Select a Career Development Course [1]		
CHEM 6104	CHEMISTRY CAREER DEVELOPMENT	
CHEM 6304	CHEMISTRY CAREER DEVELOPMENT	
CHEM 6904	CHEMISTRY CAREER DEVELOPMENT	
CHEM 5011	SEMINAR IN CHEMISTRY	0
CHEM 6011	TOPICS IN GRADUATE RESEARCH	0
CHEM 6012	ISSUES IN MODERN CHEMICAL RESEARCH	0
CHEM 5381	ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY I	3
CHEM 5382	ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY II	3
CHEM 5383	ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY III	3
Specialization		
Select one of the following emphases:		15-18
Emphasis in Analytical Chemistry		15
Select 3 from the following:		
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
CHEM 5325	SEPARATION SCIENCE	
CHEM 5326	ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION	
CHEM 5327	ANALYTICAL ELECTROCHEMISTRY	
Select 2 CHEM courses outside analytical chemistry, such as:		
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	
Emphasis in Biochemistry		15
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5334	MECHANISMS OF ENZYME ACTIONS	
CHEM 5335	GENES, GENOMES, AND NUCLEIC ACIDS	
Select 2 CHEM courses outside biochemistry, such as:		
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	
CHEM 5336	STRUCTURE & FUNCTION OF PROTEINS, MEMBRANES & CARBOHYDRATES AND FAST KINETICS	
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	

Emphasis in Inorganic Chemistry		15
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	
CHEM 5342	SOLID STATE CHEMISTRY	
or CHEM 5336	STRUCTURE & FUNCTION OF PROTEINS, MEMBRANES & CARBOHYDRATES AND FAST KINETICS	
Select 2 courses in CHEM from outside of inorganic chemistry, such as:		
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
Emphasis in Organic Chemistry		18
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
CHEM 5354	ADVANCED ORGANIC CHEMISTRY II - MECHANISMS AND PROPERTIES	
CHEM 5355	ADVANCED ORGANIC SYNTHESIS	
Select 2 courses in CHEM from outside organic chemistry, such as:		
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5341	INORGANIC CHEMISTRY	
Emphasis in Physical Chemistry		15
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	
CHEM 5364	ADVANCED GRADUATE PHYSICAL CHEMISTRY	
CHEM 5300	SELECTED TOPICS IN ADVANCED CHEMISTRY	
Select 2 courses in CHEM from outside physical chemistry, such as:		
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
or CHEM 5326	ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION	
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
Emphasis in Polymer Chemistry		18
CHEM 5356	ADVANCED POLYMER CHEMISTRY	
Select 5 courses in CHEM from outside polymer chemistry, such as:		
CHEM 5351	ADVANCED ORGANIC CHEMISTRY I - PHYSICAL ORGANIC CHEMISTRY	
CHEM 5354	ADVANCED ORGANIC CHEMISTRY II - MECHANISMS AND PROPERTIES	
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	
CHEM 5355	ADVANCED ORGANIC SYNTHESIS	
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	
CHEM 5325	SEPARATION SCIENCE	
CHEM 5326	ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION	
CHEM 5327	ANALYTICAL ELECTROCHEMISTRY	
CHEM 5331	ADVANCED BIOCHEMISTRY I	
CHEM 5334	MECHANISMS OF ENZYME ACTIONS	
CHEM 5335	GENES, GENOMES, AND NUCLEIC ACIDS	
CHEM 5341	INORGANIC CHEMISTRY	
CHEM 5342	SOLID STATE CHEMISTRY	
or CHEM 5336	STRUCTURE & FUNCTION OF PROTEINS, MEMBRANES & CARBOHYDRATES AND FAST KINETICS	
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	
CHEM 5364	ADVANCED GRADUATE PHYSICAL CHEMISTRY	
CHEM 5300	SELECTED TOPICS IN ADVANCED CHEMISTRY	

Electives		
Select research and elective courses with the guidance of the supervising committee		
Dissertation		
Select at least 9 hours from the following:		9
CHEM 6399	DISSERTATION	
CHEM 6699	DISSERTATION	
CHEM 6999	DISSERTATION	
CHEM 7399	DOCTORAL DEGREE COMPLETION (recommended for final semester)	
Total Hours		**33-36**

1 For guidance and options of "Career Development" (possible "Internship"), students will consult with their research supervisor and with the Graduate Advisor.

2 CHEM 5358 cannot be used to fulfill this requirement. Students who do not have a good instrumentation background should consider taking CHEM 5421.

Program Completion

After admission to the doctoral program, the student must successfully complete the appropriate examination(s) required by the faculty of the student's discipline.

15-18 hours of coursework in the student's selected emphasis should be completed in the first year of study but no later than the second year of study.

Students will enroll in Advanced Laboratory Techniques lecture courses in their 2nd (CHEM 5381), 3rd (CHEM 5382), and 4th (CHEM 5383) long semesters.

Students will enroll in Chemistry Career Development courses (CHEM 6104, CHEM 6304 or CHEM 6904) during their internship period, typically in years 3 to 5.

After completing coursework in their chosen emphasis area, students will register for research and elective courses under the guidance of their supervision committee until they pass the Comprehensive Examination. Upon passing the examination, they will enroll in dissertation courses (CHEM 6399, CHEM 6699 CHEM 6999) until they complete research.

A course grade may be used to satisfy degree requirements for no more than seven years after the course has been completed.

A supplementary set of guidelines, published by the Department of Chemistry and Biochemistry, should be consulted.

Advising Resources

Current students may contact our graduate advisor. Prospective students should contact our graduate recruiting chair.

LOCATION:

Graduate Advisor

Chemistry Research Building (CRB) Room 203

Graduate Recruiting Chair

Chemistry Physics Building (CPB) Room 352

EMAIL:

chemgradadvising@uta.edu

PHONE:

817-272-0262

WEB:

Schedule an appointment (https://www.uta.edu/academics/schools-colleges/science/departments/chemistry/advising/)