The Department of Chemistry and Biochemistry at Texas State University offers graduate programs leading to a master of science or master of arts in chemistry or a master of science in biochemistry.

The programs, which consist of lectures, laboratory work and research, are designed to train professional chemists and provide an appropriate background for study toward advanced degrees. Each master’s program provides students with a specialized body of knowledge that furthers their academic development, proficiency in laboratory techniques and professional growth.

As teacher-scholars equally devoted to both roles, department faculty are committed to maintaining and improving the quality of student instruction and have established a research program that emphasizes student involvement. Fields of research include analytical, inorganic, organic, polymer and physical chemistry as well as biochemistry. The department is accredited by the American Chemical Society.
Course Work

Chemistry
The master of science degree with a major in chemistry requires 30 semester hours. Generally, an undergraduate degree in chemistry is required for admission to this program.

The master of arts degree with a major in chemistry has the same credit-hour requirement as the master of science degree with thesis, but a thesis is not required.

Biochemistry
The master of science with a major in biochemistry requires 30 semester hours, including the thesis.

This program is designed for students who have undergraduate degrees in biology, biochemistry or chemistry and wish to pursue advanced studies in biochemistry.

Areas of Emphasis

Analytical Chemistry
- application of LC/MS to proteomic studies
- LC/MS analyses of heterocyclic organosulfur compounds in crude oil
- electrochemical studies of halogenated aromatic compounds

Biochemistry
- studies of DNA replication, repair and chromosome stability in model systems
- chromosomal DNA repair pathways and maintenance of telomere stability
- the molecular biology and genetics of fish genetic model systems in relation to DNA damage, DNA repair and gene transcriptional regulation to determine their effect on tumor development and/or organismal toxicity
- isolation, physical and kinetic characterization of the bacterial enzymes responsible for the selective removal of sulfur from petroleum
- investigation of molecular interactions involving biomolecules (proteins and DNA) using proteomic techniques
- structural and regulatory studies of proteins

Inorganic Chemistry
- synthesis and characterization of polyhedral borane compounds suitable for bioassimilation and use in boron neutron capture therapy for treatment of brain tumors
- topochemical syntheses of novel sulfide and selenide structures

Organic Chemistry
- supramolecular chemistry design, synthesis and study of biomimetic calixarene compounds that exploit properties of molecular recognition in order to function as sensors and catalysts

Physical Chemistry
- time of flight mass spectrometry, molecular beam methods and laser spectroscopy are wedded to probe the properties and dynamics of molecular clusters
- classical thermodynamics and kinetics of reactions

Polymer and Nanocomposite Chemistry
- synthesis and characterization of thermally stable polymers; aging and degradation of plastics; polymer backbone reactions and adhesives
- polymer/clay nanocomposites, computation chemistry, surface chemistry of colloids, wastewater treatment sorbents, theories of gas transport in polymers, biodegradable polymers
- synthesis and characterization of high-performance polymers

Admission Policy
The Biochemistry/Chemistry programs require applicants to have a minimum GPA of 3.0 on the last 60 hours of undergraduate work leading to a bachelor's degree.

Applicants must hold a baccalaureate degree in chemistry, biochemistry or closely related field from a regionally accredited university.

Each applicant must submit the following to the Graduate College:
- an online Graduate College application through ApplyTexas
- application fee
- one official transcript from each senior-level, post-secondary institution attended
- two letters of recommendation regarding academic potential and undergraduate research experience
- statement of purpose discussing career goals and undergraduate experiences
- official Graduate Record Exam (GRE). See www.gradcollege.txstate.edu/chem for details about GRE requirements.

Visit www.gradcollege.txstate.edu/apply for access to an online application, where to send application documents and additional details. Applications are due by April 1 for the fall semester and October 1 for 2014 spring semester. Priority deadline is February 1 for the fall semester.

Financial Assistance
Laboratory instructorships are available and provide a nine-month stipend of more than $11,000. Research assistantships are also available. Applications for assistantships should be sent directly to the chair of the Department of Chemistry and Biochemistry.

For more information about scholarships, financial aid and application deadlines, visit the Graduate College website at www.gradcollege.txstate.edu and click on Financing Your Graduate Education. Please note that program admission priority deadlines must be met in order to be considered for scholarships, fellowships and assistantships.

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