

Chemistry and Biochemistry



UT chemistry, biochemistry and forensic science majors receive a broad-based and rigorous education including the intellectual, experimental and communication skills needed to participate effectively as scientific professionals. Chemistry plays a vital role in nearly every scientific field and is frequently the degree program of choice for students interested in the health professions.

THE UNIVERSITY
OF TAMPA

B.S. in Chemistry
B.S. in Chemistry (ACS-certified)
B.A. in Chemistry
B.S. in Biochemistry
B.A. in Biochemistry
B.S. in Forensic Science
Minor in Chemistry
**B.S. in Chemistry or Biochemistry/MBA
Joint Degree**

What Will You Learn?

Students receive a solid foundation in the five major areas of chemistry: analytical, biochemistry, inorganic, organic and physical. The **B.S. (ACS-certified), B.S. and B.A. in chemistry** programs prepare students for the job market or graduate study. Students interested in entering the job force immediately following graduation or eventually pursuing graduate studies in chemistry should consider the B.S. An even more rigorous track is a B.S. degree certified by the American Chemical Society. This track includes more hours conducting research than the other B.S. program. The B.A. is a good choice for students interested in the chemical sciences or medicine, dentistry or veterinary science. With fewer credit hours than the B.S., students can explore other electives.

The **B.S. or B.A. in biochemistry** is a degree option for students interested in science at the intersection of biology and chemistry. The B.S. is ideal for students interested in graduate study in biochemistry and molecular biology or in the health professions. The B.A. is also appropriate for students considering the health professions.

The **B.S. in chemistry or biochemistry/MBA**, is a five-year joint degree program designed to develop scientists who can serve as managers and analysts in chemical, pharmaceutical, biotechnology, medical diagnostic and investment companies. Graduates are awarded both a B.S. and an MBA.

All chemistry majors are assigned to a faculty member who serves as an advisor and whose specialty coincides with the student's area of interest. Students are encouraged to take advantage of research opportunities in areas such as atmospheric chemistry, marine nutrient analysis, protein chemistry and genetic regulation of cancer.

UT also offers a **B.S. in forensic science**, which prepares students to work in local, state and federal crime labs and law enforcement agencies. The curriculum is enhanced by internship opportunities with the Florida Department of Law Enforcement and the Hillsborough County Medical Examiner's Office.



ACS-Accredited Program

The University of Tampa's undergraduate chemistry program is accredited by the American Chemical Society (ACS), the world's largest scientific society and one of the leading sources of authoritative scientific information. ACS reviews programs based on their institutional environment, faculty and staff, infrastructure, curriculum, undergraduate research, development of student skills and program self-evaluation.

FACULTY highlights



L. Michael Carastro, Ph.D.
associate professor of biochemistry

Michael Carastro's research involves the molecular mechanisms that regulate tumor suppression genes, and he has received funding from the National Cancer Institute for work on the Vitamin D receptor. Another area of expertise is pharmacogenetics and nutraceuticals in cancer prevention and treatment. In addition to his faculty position at UT, he is a member of the Moffitt Comprehensive Cancer Center and Research Institute.



Steven Hendrix, Ph.D.
associate professor of chemistry

Steven Hendrix specializes in the chemistry and analysis of seawater and directs UT's Laboratory for Atmospheric and Marine Analysis. His research focuses on developing new methods for analyzing environmental nitrogen compounds, the use of advanced data acquisition and control technology and providing correlation support for the on-site USF-UT Coastal Ocean Monitoring and Prediction Station (COMPS).

Practical Experience

Research and Internships

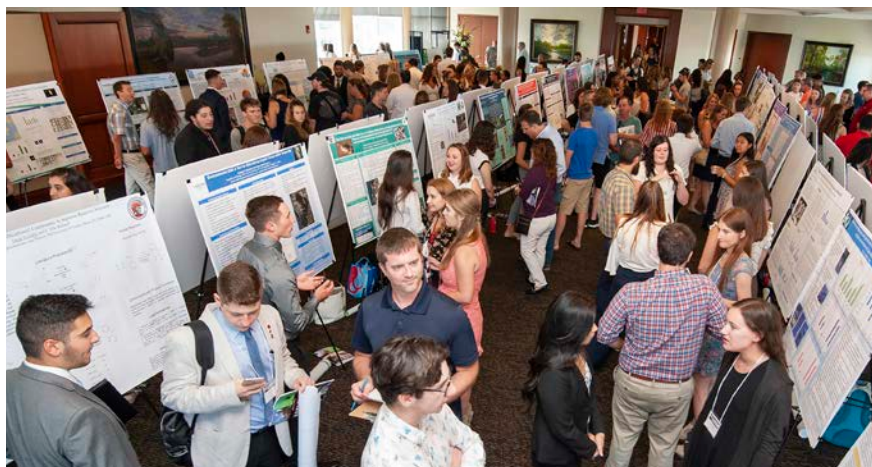
Students are encouraged to participate in faculty research projects or pursue their own independent work under the guidance of faculty. They learn how to design and conduct experiments and to interpret empirical data. Students not only receive academic credit but also may **present their findings in scientific publications and at conferences**. On campus, the **CNHS Undergraduate Research Symposium** provides an opportunity for students to present their current or recently completed research projects in a poster format. Research topics encompass areas such as atmospheric chemistry, marine nutrient analysis, protein chemistry, organic synthesis and genetic regulation of cancer.

Internships help students relate their classroom studies to real-world experiences. Students have interned at locations such as Moffitt Cancer Center, Thornton Labs, Hillsborough County Medical Examiner's Office, Florida Department of Law Enforcement, Tampa General Hospital and The Florida Aquarium.

Equipment and Facilities

UT has invested heavily in state-of-the-art labs and equipment. Instruments include:

- DNA sequencer
- Electrophoretic gel imaging and documentation system
- Tissue culture facility with four laminar-flow hoods
- 300 MHz NMR (nuclear magnetic resonance) spectrometer
- ICP-AES (inductively coupled plasma – atomic emission spectrometer)
- GC/MS (gas chromatograph/mass spectrometer)
- LC/MS/MS (liquid chromatograph/mass spectrometer)
- ATR-FTIR (attenuated total reflection – Fourier transform infrared spectrometer)
- HPLC-PDA (high performance liquid chromatograph – photodiode array detector)
- Ultraviolet/visible and fluorescence spectrophotometers



The College of Natural and Health Sciences Undergraduate Research Symposium is held each spring and provides excellent preparation for graduate or professional school and future presentations. All participants are eligible for an award for best poster presentation.

What Can You Do With These Degrees?

Career opportunities in chemistry, biochemistry and forensic science are virtually limitless. The knowledge and application of chemical principles is part of every industrial, scientific, educational and government enterprise. The mastery of chemistry requires excellent analytical and mathematical skills. Students learn to solve problems and think things through — skills useful in any job.

Employment options depend on how far you take your education. A bachelor's degree can be used to gain acceptance to medical school, law school and other graduate or professional programs.

Graduate schools attended by UT chemistry, biochemistry and forensic science majors include the University of Texas at Austin, Auburn University, Memphis Southern College of Optometry, Illinois Institute of Technology, University of Iowa, University of Medicine and Dentistry of New Jersey and Tufts University, The University of North Carolina at Chapel Hill and Purdue University, among many others.

With a bachelor's degree, entry-level jobs for chemistry or biochemistry undergraduates are often either **industrial quality control jobs** (chemical analysis work) or **research assistant jobs** (helping to develop new products or improving existing ones).

Federal, state and local governments also operate research labs and regulatory agencies that employ chemists to perform research and analytical services. Other areas to be considered are food chemistry, textile and fabric chemistry, industrial hygiene, toxicology, chemical sales or instrumentation development and teaching high school chemistry.

Tavya Benjamin '12, M.D. Resident Physician New Hyde Park, NY

After graduating from UT, Tavya Benjamin went on to attend medical school at the University of Central Florida and is now a resident physician at North Shore University Hospital and Long Island Jewish Medical Center's Department of Urology.

As a chemistry student at UT, she worked as a lab assistant for associate professor Eric Werner, researching metals that contain magnetic and luminescent properties. She also conducted data research for a doctor in Miami and spent eight weeks shadowing cardiac surgeons and cardiologists through the Arizona Heart Foundation's Cardiovascular Summer Student Program.

Biochemistry is one of the major growth areas in chemistry, and an expansion of **startup biotechnology companies** is creating new opportunities for graduates.

Graduates of the forensic science program are well-prepared for employment with **local, state and federal crime laboratories and law enforcement agencies** in roles such as firearms examiner, forensic chemist, drug testing chemist, crime scene investigator and forensic DNA technician.



alumni profiles

Stephen Rambala '17

Analytical Chemist
Elite Pharmaceuticals Inc.
Northvale, NJ

Irena Gushterova '16

Research Assistant
Massachusetts General Hospital
Boston, MA

Rebecca Nelson '16

Crime Laboratory Analyst
Florida Department of Law Enforcement
Tampa, FL

David Hardy '15

Ph.D. student in chemistry
Florida State University
Tallahassee, FL

Hilary Brown '14

Ph.D. student in analytical chemistry
Purdue University
West Lafayette, IN

Rebecca Gibbons '14, Ph.D.

Director of Assessment and Evaluation
City Colleges of Chicago
Chicago, IL

Krystle Corallo '13

Scientist/Skin Biology
Estee Lauder Companies

Chemistry and Biochemistry



Angelo Nicolaci '19

Major: biochemistry

Activities: orientation leader, Spartan Ambassador, American Society of Biochemistry and Molecular Biology

Hometown: Guanare, Venezuela

Angelo Nicolaci received a department summer research fellowship to study the molecular basis of cancer and the gene regulation of tumor-suppressor genes. "UT has helped me develop one of the most important skills as a researcher, which is critical thinking," he said. "All the upper-level chemistry courses are research-based. Students have the opportunity to acquire tissue culture experience as undergraduates, which is pretty uncommon." After graduation, Angelo plans to work in a lab and apply to Ph.D. programs.

Student Organizations

UT students may participate in the activities of two affiliate groups of national scientific associations on campus:

- Student Affiliates of the American Chemical Society (SAACS)
- Undergraduate Affiliate Network of the American Society for Biochemistry and Molecular Biology

The on-campus organizations **Alpha Epsilon Delta** (AED) and UT's Skull and Bones are for students intending to pursue a career in the health sciences. AED is a national health pre-professional honor society dedicated to the encouragement and recognition of excellence in pre-professional health scholarship, including medicine, dentistry, veterinary medicine and others. The UT chapter educates members about preparation for professional schools.

Scholarships

Chemistry, biochemistry and forensic science majors may qualify for **Life Science Scholarships**, which are annual scholarships up to \$5,000 (renewable for four years) for first-year students (fall term only).

Qualifications include an unweighted high school GPA of 3.25, 1200 SAT (critical reading and math) or 26 ACT, completed admission application and acceptance for full-time study. The annual deadline for scholarship consideration is Feb. 1.

The department also offers a limited number of competitive **Summer Research Fellowships** for juniors and seniors to conduct research with faculty.

The ROTC program can assist pre-health professional students with their professional program finances through the **Health Professions Scholarship Program**.



About UT

The University of Tampa is a medium-sized, private university offering more than 200 undergraduate and graduate programs of study. Richly diverse, UT is the school of choice for approximately 9,600 students from all 50 states and 135 countries.

Visit www.ut.edu/chemistryandphysics for more information about UT and the Department of Chemistry, Biochemistry and Physics.

