

# MAP THE FUTURE CHEMISTRY

A Guide For  
Optimizing Your Degree



This career map provides a general blueprint of how to navigate your under-graduate program. The map highlights quality experiences to supplement your coursework and identify academic milestones for years one through four.

Take advantage of the rich resources the university and Chattanooga community have to offer as you prepare for post-college years. During your time here, forge connections, participate in organizations and utilize exploratory learning options to gain real-world experiences outside of the classroom.

## ABOUT THE COLLEGE OF ARTS AND SCIENCES

Our mission is to provide an environment for intellectual curiosity and a foundation for life-long learning, thinking, reflection and growth. We do this by: equipping students with transferable skills, encouraging cultural and intellectual diversity and advancing knowledge through research and creative activities.

Small classes, careful advising and personal attention make our commitment work for students majoring in the fine arts, the humanities, the sciences and behavioral sciences, and for students preparing for professional study through a liberal education.

## YOUR CHEMISTRY DEGREE

Our department upholds a commitment to excellence in undergraduate education and to facilitate student success in these challenging disciplines. We prioritize undergraduate research to generate new knowledge for the sciences and enrich the education of our students. Our department provides a solid foundation in basic concepts and theories as well as dynamic laboratory experiences. By placing an emphasis on public service, we not only provide technical support to area industries and institutions, but enhance local pre-college instruction through activities designed to assist teachers and students.

## CHEMISTRY

Chemists are in the forefront of improving our daily lives and activities. Through research, chemistry is developing and exploring materials, medicines and technologies that advance our knowledge at the molecular level. Chemists are major contributors in numerous aspects of industry, the health professions, environmental protection, energy production and education. Our program is designed to prepare students for that wide-range of opportunities.

Students choose a concentration from these options:

- **Chemistry:** Approved by the Committee on Professional Training of the American Chemical Society.
- **Biochemistry:** Ideal for students wanting to follow a pre-health track.
- **STEM:** For students wanting to teach chemistry.

[utc.edu/chemistry](http://utc.edu/chemistry)

## SCHOLARSHIPS FOR CHEMISTRY STUDENTS

**Marvin Anthony:** Given to rising juniors or seniors based on academic performance and service to the department. Preference given to Chemistry majors with industrial interests.

**Murray Raney:** Given to rising juniors or seniors based on academic performance and service to the department. Preference to BS Chemistry majors with graduate school or industrial interests.

**Thomas Pre-Medicine:** Given to a rising junior or senior based on academic performance and service to the department. This student should be interested in being a medical doctor.

**Thomasson Pre-Medicine:** Given to a rising junior or senior based on academic performance and service to the department. This student should be interested in being a medical doctor.

**Higdon Textbook:** Given to an outstanding chemistry student at any level. Need based.

**Dr. Don J. Russell:** Given to an outstanding chemistry student.

**Santiago Family Biochemistry:** Given to an outstanding student with preference given to a non-traditional student in BS Chemistry: Biochemistry with a minimum 3.0 Chemistry GPA. Must be a rising junior or senior.

**Alan Zinaman Scholarship:** Given to a student who has been active in research and is interested in graduate school in chemistry after graduation.

**ACS Local Section:** Given to a senior based on service to the department, academic achievement and interest in a career in chemistry.

**Gregory Grant Award in Inorganic Chemistry:** Given to an outstanding student in inorganic chemistry.

**Student Affiliates Service Award:** Given to a student member based on exceptional service and contributions to the Student Affiliates.

**Teaching Assistantship Award:** Given to an outstanding teaching assistant.

**Swan Award (CRC Handbook):** Given to an outstanding freshman for academic performance and service to the department.

**Edwards Award:** For outstanding sophomores or juniors for academic performance and service to the department.

**McNeely Award:** For outstanding seniors planning graduate studies in chemistry or in related areas.

**Waddell Award:** Given to an outstanding junior or senior for academic performance and service to the department. Preference given to a student who plans post-graduate study.

**Gross Award:** Given to an outstanding senior for academic performance and service to the department.

**Undergraduate Analytical Award (subscription to Analytical Chemistry):** Given to an outstanding student in analytical chemistry courses.

**Organic & Polymer Award:** Given to an outstanding student in organic chemistry courses.

**Gamma Sigma Epsilon:** Given to all students who meet the hours and GPA criteria.

**Grote Chemistry Scholarships** are presented to as many as three incoming chemistry majors. Awards of \$12,000 (\$3,000 per year for four years). The awards can be added to other University scholarships and the Tennessee Lottery scholarship.

## EXPERIENTIAL LEARNING FOR CHEMISTRY MAJORS

UTC emphasizes opportunities for meaningful learning experiences inside and outside of the classroom.

### Internships and Outreach

Our students regularly participate in local outreach projects and prestigious internships including:

- Creative Discovery Museum
- Tennessee Student Environmental Alliance
- Oak Ridge National Laboratory
- Unilever
- National Science Foundation Research Experience for Undergraduates

### Summer Undergraduate Research Program

An intense research experience where students are paired with a faculty member and receive a stipend for ten weeks of full time participation during the summer.

Previous research opportunities include:

- Computational and Experimental Research on Quinone Reactivity
- Fundamental Nuclear Physics Research with the Nab Experiment at Oak Ridge N. L.
- Journey to Biochemical & Toxicological Research
- New Bismuth Catalysts for Organic Reactions in Aqueous solution

- Photoacoustic Spectroscopy: Light in and Sound out
- False Positives: Organic Gunshot Residues at the Firing Range

## CAREER POSSIBILITIES FOR CHEMISTRY MAJORS

Are you starting college with a specific career in mind? Chemistry graduates excel in these fields and more.

Visit University Career Services at [utc.edu/career-student-employment](http://utc.edu/career-student-employment) for a detailed list of career possibilities.

### Food and World

- Consumer Product Chemist
- Environmental Chemist
- Food and Flavor Chemist
- Agricultural Chemist
- Water Chemist

### Health

- Medical Doctor
- Physician's Assistant
- Dentist
- Pharmacist
- Optometrist

### Industry

- Oil and Petroleum Chemist
- Polymer Chemist
- Pulp and Paper Chemist
- Textile Chemist
- Quality Control Chemist

### Legal and Crime

- Forensic Investigator
- Lawyer (Patent Law)
- Analytical Chemist

### Life

- Biomedical Researcher
- Biochemistry Researcher
- Biotechnology Worker
- Medicinal Chemist

### Materials

- Materials Scientist
- Hazardous Waste Manager
- Inorganic or Catalysis Chemist
- Organic Chemist

### Sales and Business

- Technical Sales Person
- Pharmaceutical Sales Person
- Chemical Sales Person
- Research and Development Management

### People and Knowledge

- High School Teacher
- College Professor
- Chemical Information Specialist
- Science Writer

These options do not represent all of the occupations you might consider. Some of the options listed above might require additional training.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	PROF. DEVELOP.
EXPLORATION	Meet with the Center for Advisement and an Academic Program faculty member to brainstorm academic goals and pinpoint academic focus.	You should start to narrow down your academic concentration to match with your career goals.  Develop a plan with your advisor that will lead you to your aspirations after graduation.	Begin searching for programs you will be applying to in the fourth year (graduate school).  Continue meeting advisors and building relationships with faculty (who will provide reference letters).	Launch your job/graduate program search and applications. Focus on your strengths and promoting your knowledge base.  Work with University Career Services and your advisor during this process.	American Chemical Society acs.org
ACADEMIC MILESTONES	Complete CHEM 1110-1120 General Chemistry, required Math course and other General Education requirements where appropriate.	Complete required Organic Chemistry and Biology courses, and other General Education requirements where appropriate.	Complete upper division chemistry courses. Establish and maintain a professional relationship with your academic advisor. Get involved in courses that will enhance your analytical thinking skills.	Complete any remaining general education requirements and advanced science courses in major. Apply for graduation. Complete your graduation requirements.	American Medical Association Chicago, IL ama-assn.org
CONNECTIONS	Join a student club in your major.  Explore Student Development opportunities.  Schedule an appointment with a faculty member to discuss your major and career goals.	Get involved with campus Student Organizations. Quality is always better than quantity.  Volunteer with organizations in the Chattanooga area.  Apply for a Research Award.	Submit abstracts/papers to research conferences and attend to meet others in your field of interest.  Consider faculty-sponsored research or internships for experiential learning.	Join appropriate professional organizations (e.g., The American Chemical Society); reviewing conference proceedings, journals and academic research.  Network with Department and UTC alumni.	American Dental Association Chicago, IL ada.org
READINESS	Meet with University Career Services.  Identify four skills employers want and begin cultivating them now.  Attend a part-time job fair in the fall or spring.	Write a professional résumé. Create a computer file for notes on job search websites, names & contact information of potential mentors or employers, and job search activities.  Put together an interview outfit.	Hone skills with University Career Services' MOC interview programs.  Attend career fairs on campus.  Develop communication skills.	Contact organizations and associations in your interest area for informational interviews, potential mentors and shadowing opportunities.  Engage with University Career Services for career prep resources they offer.	Graduate Programs gradschools.com
ACHIEVEMENT	Complete 30 credit hours. Meet with your advisor twice.  Have your second year mapped out and a general plan for years three and four.	Complete 60 total credit hours. Meet with your Academic Advisor at least three times.  Have your third year mapped out and a general plan for year four.	Complete 90 total credit hours and check-in with graduation goals. Begin preparing employment and graduate program admissions packets. Complete admissions exams.	Complete the minimum credit hours to graduate.  Join the Alumni Association and seek opportunities to introduce other to your employer or graduate/professional program.	

**CHEMISTRY STEM EDUCATION [utc.edu/stem-education](http://utc.edu/stem-education)**

Participation in the STEM Education program gives students valuable hands-on teaching experience, a four-year degree in their respective field and completion of requirements necessary to earn a teaching license. Biology majors who choose the STEM Education concentration should successfully meet these milestones as they navigate the biology curriculum.

**FIRST YEAR**

- STEM 1030 and STEM Checkpoint 1.
- Meet with STEM advisor in addition to meeting with your academic advisor.

**SECOND YEAR**

- STEM 2010, 2020 and STEM Checkpoint 2.
- Meet with STEM advisor in addition to meeting with your academic advisor.

**THIRD YEAR**

- STEM 3010, 3020 and STEM Checkpoint 3.
- Apply for Apprentice Teaching.
- Prepare to take the Praxis.
- Meet with STEM advisor in addition to meeting with your academic advisor.

**FOURTH YEAR**

- STEM 4010, 4020 (Apprentice Teaching) and STEM Checkpoint 4.
- Meet with STEM advisor in addition to meeting with your academic advisor.