DEPARTMENT OF CHEMISTRY

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Programs of the Department

The Department of Chemistry offers the following curricular options:

- Major in Chemistry
- Major in Chemistry - Professional Track
- American Chemical Society accredited major in Chemistry
- Major in Forensic Chemistry (General Track, Trace Evidence/ Drug Analysis Track, or DNA track)
- Chemistry Secondary Education Concentration for students planning to teach chemistry at the secondary level
- Minor in Chemistry
- Biochemistry Concentration through Molecular Biology, Biochemistry and Bioinformatics Program
- Environmental Chemistry Track in Environmental Science and Studies Program
- Master of Science in Forensic Science

The Chemistry major provides a strong background in all major areas of chemistry: physical chemistry, inorganic chemistry, organic chemistry, biochemistry, and analytical chemistry, including instrumental analysis. Students may concentrate in one or more of the above areas by taking advanced courses of specific interest. Students are required to learn to use instruments commonly encountered in chemistry laboratories. Small classes are prevalent in all chemistry courses and students are taught by faculty in both lecture and laboratory. Special topics courses are offered periodically to provide students the opportunity to broaden their background in chemistry.

Chemistry majors are prepared to pursue many different careers after graduation, including graduate study in chemistry and related areas, employment in government or industry, professional school (e.g., medicine, dentistry, pharmacy, law, physician assistant, library science), or secondary school teaching. Other employment opportunities are available to Chemistry majors, including those in water pollution, forensic chemistry, environmental chemistry, molecular biology, human identification, research and development, quality assurance and genetic engineering.

Departmental Honors Option

The Department of Chemistry, under the direction of the Towson University Honors College, offers a Departmental Honors option for students who demonstrate exemplary abilities in their discipline. Students in this option will work closely with faculty mentors in an individual program of research, directed readings, independent study and seminar. Departmental honors will be posted to the transcript shortly after the bachelor's degree is conferred.

Criteria for Admission into the Departmental Honors Option

1. Major in Chemistry or Forensic Chemistry.
2. Completion of at least 60 units of courses.
3. Overall cumulative GPA of 3.25 or above and a 3.50 or above cumulative average in major course requirements. Students below this threshold may appeal to the Departmental Honors Committee.

Interested students should contact the Department Honors Coordinator (Dr. Keith Reber, kreber@towson.edu) to find out the procedure for applying to this program.

ACS Certification

Certification of a student's chemistry degree from the American Chemical Society (ACS) is widely recognized throughout industry, government and education as a standard of excellence. Students with a good academic record are encouraged to pursue this option. Students electing the Professional Track may obtain ACS certification of their degrees provided they submit a comprehensive written report on their research (CHEM 491). Students who have taken PHYS 211-PHYS 212 may count these courses for ACS certification provided that an additional advanced physics lecture course is taken, subject to prior approval by the Department of Chemistry.

Environmental Chemistry Track in Environmental Science and Studies Program

Students may pursue the Environmental Chemistry Track of the Environmental Science and Studies Program that is described in a later section in the College of Science and Mathematics.

Transfer Credit Policy

Students who transfer to TU from a regionally accredited two-year college with an A.A. degree should have completed two terms of general chemistry with lab, two terms of organic chemistry with lab, one term of calculus, and two terms of general physics. Students who transfer from a two-year college without an A.A. degree should complete as many of the above-mentioned chemistry, physics, and mathematics courses as possible. Students are strongly encouraged to complete all required organic chemistry courses at the same institution (either all at TU or all at another institution). Transfer students should consult the Department of Chemistry concerning the transferability of chemistry courses and this catalog for TU transfer policies.

Advanced Placement and Credit for Prior Learning

The Department of Chemistry awards credit for General Chemistry through the Advanced Placement Examinations given by the Educational Testing Service.

Students may also receive credit for General Chemistry by taking the Credit for Prior Learning Examination, which is administered through the Registrar's Office. Students may also receive credit for other chemistry courses by passing the appropriate examinations. Further information may be obtained from the department.

Advanced Composition Course

The Department of Chemistry offers CHEM 301 Professional Ethics for Scientists, which is a course that deals with professional ethics in the physical sciences and fulfills the requirements for the advanced writing course.

Core Curriculum Courses

Code	Title	Units
Core 9: Advanced Writing Seminar		
CHEM 301	PROFESSIONAL ETHICS FOR SCIENTISTS	3
Core 8: Physical Sciences		
CHEM 100	CHEMISTRY AND CURRENT PROBLEMS	3
CHEM 104	INTRODUCTION TO ENVIRONMENTAL CHEMISTRY	4
CHEM 115	HONORS CHEMISTRY FOR ALLIED HEALTH PROFESSIONS I	4
CHEM 131	GENERAL CHEMISTRY I LECTURE [1]	3
CHEM 121	ALLIED HEALTH CHEMISTRY I LECTURE [1]	3
CHEM 121L	ALLIED HEALTH CHEMISTRY I LABORATORY [1]	1
CHEM 131L	GENERAL CHEMISTRY I LABORATORY [1]	1
CHEM 132	GENERAL CHEMISTRY II LECTURE [1]	3
CHEM 132L	GENERAL CHEMISTRY II LABORATORY [1]	1

[1] *These two-term lecture-laboratory sequences meet the Core 8 requirement.*

Research in Chemistry

Students interested in participating in research may enroll in CHEM 491 and should consult the undergraduate research coordinator, who will assist them in finding a research project of interest. Students must complete CHEM 491 before their final term at TU. In addition, undergraduate research participation grants are awarded by TU on a competitive basis to provide support for student research. The department offers competitive summer research stipends.

Internships

Chemistry majors are encouraged to participate in the Internship program and receive academic credit. Internships may be undertaken in either the public or private sector. Internships must have a significant chemistry component. At the completion of the internship, the student submits for evaluation a portfolio describing the work undertaken. This portfolio will be evaluated by Chemistry Department faculty in conjunction with the student's work supervisor during the internship.

Academic credit can be acquired by taking CHEM 395, Internship in Chemistry. Enrollment in CHEM 395 requires prior approval of the Department Internship Coordinator. Students interested in participating in the Internship program should contact the Department Internship Coordinator (Mr. Mark Profili, mprofili@towson.edu) to find out the procedure for applying to this program at least one term prior to when they wish to begin an internship. Further information on available internships can be obtained from the University Career Center.

Graduate Programs

The Master of Science in Forensic Science program is a FEPAC-accredited program with areas of study in forensic molecular biochemistry and forensic analytical chemistry focusing on forensic DNA analysis and trace analysis rich with laboratory experience, capped with a research program, internship in a forensic laboratory or thesis. The program is intended for students who are interested in working as forensic scientists in the disciplines of forensic body fluid analysis and drug and trace evidence analysis. Detailed information regarding the program is given in the *Graduate Catalog*.

The Department of Chemistry participates in the Master of Science (M.S.) program in Environmental Science. Detailed information regarding these programs is also found in the *Graduate Catalog*.

Accelerated Program

Undergraduate students with junior standing or above majoring in forensic chemistry, chemistry, or a related discipline and a minimum cumulative GPA of 3.00 are eligible to apply to the Accelerated B.S. to M.S. in Forensic Science Program. The Accelerated Program permits students to earn up to 9 units toward *both* the undergraduate degree and the M.S. in Forensic Science at no additional cost. For more details, visit the Accelerated Program website and contact the Forensic Science Program Director, Mr. Mark Profili (mprofili@towson.edu).

Departmental Activities and Awards

Many Chemistry majors actively participate in the Student Affiliates of the American Chemical Society (ACS), a student group supported by the department under the auspices of the ACS. This organization permits students to join the national organization and to obtain certain chemistry publications and services at reduced rates.

Student awards are given annually for outstanding work in chemistry courses. These include:

- CRC Press Freshman Chemistry Achievement Award
- Achievement Award in Organic Chemistry
- ACS Achievement in Organic Chemistry Award (joint Polymer-Education Committee)
- Analytical Division (ACS) Award in Analytical Chemistry
- Floyd A. Blankenship Award in Physical Chemistry
- American Institute of Chemists Outstanding Senior Award
- ACS Outstanding Student Award
- Dr. Frank R. Milio Book Endowment
- Linda Sweeting Endowment for Undergraduate Research in Science
- Alan and Eileen Wingrove Endowment for Chemistry Scholars
- Raspet Summer Research Fellowship.

Majors

- Major in Chemistry
- Major in Chemistry - Professional Track
- Major in Chemistry - Secondary Education Concentration
- Major in Forensic Chemistry

Minors

- Minor in Chemistry

Faculty

Professors: Ryan Casey, Kelly Elkins, Ellen Hondrogiannis, Shuhua Ma, Clare Muhoro, David Ownby, Sonali Raje, John Sivey (Chairperson), Ana-Maria Soto

Associate Professors: Mary Devadas, Kathryn Kautzman, Keith Reber, Shannon Stitzel (Assistant Chairperson), Cynthia Zeller

Assistant Professors: Abolghasem Bakhoda, Kyle Edwards, Stephen Hancock, Khanh-Hoa Tran-Ba

Lecturer: Nicole Carbonaro

Clinical Assistant Professor: Courtney Thomas

Lecturer III: Katharine Bowdy, Joseph Bushey

Lecturer II: Dimitra Douskas, Daniel Macks

Graduate Program Director: Mark Profili