Welcome to Chemistry!

Major Overview:

Chemistry is the “central science.” Such diverse subjects as art, anthropology, geology, biology, materials science, environmental science, engineering, nursing and psychology have areas in which fundamental principles and process details are understood in terms of chemistry.

The Chemistry Department at Binghamton University offers a broad array of courses and areas of concentration. Prospective chemistry majors should have at least a standard background in high school mathematics and sciences. In addition to the traditional sub-disciplines of analytical, inorganic, organic and physical chemistry, members of the Chemistry Department faculty are engaged in a number of rich cross-disciplinary research areas, including:

- bioanalytical, bioinorganic, bioorganic and biophysical chemistry
- electrochemistry
- environmental chemistry
- materials chemistry
- biochemistry
- photochemistry

Courses:

Courses to consider:

- **MATH 224/225: Differential and Integral Calculus**
  These two half-semester courses take the place of the traditional Calculus 1 course. Topics you will study in these two courses include properties of real numbers, elementary functions, limits, differentiation and integration.

  This course is appropriate for first-year students.

- **MATH 226/227: Integration Techniques & Application and Infinite Series**
  These two half-semester courses take the place of the traditional Calculus 2 course.
Topics you will study in these two courses include applications of the integral (plane areas, volumes, surface areas), exponential and trigonometric functions and their inverses, conics and polar coordinates, and infinite series (convergence test, power series, Taylor series).

This course is appropriate for first-year students.

- **CHEM 107: Intro to Chem Principles I (fall only)**
  Fundamentals of chemistry, including atomic structure, stoichiometry, chemical reactions, kinetic theory of gases, thermochemistry, chemical bonding, molecular geometry and bonding theories, as well as properties of liquids, solids and solutions. This material provides the foundation for CHEM 108.

  Format: Three lectures, one recitation and one three-hour laboratory per week.

  This course is appropriate for first-year students.

  Prerequisite: High school chemistry, CHEM 100 or consent of instructor.

- **CHEM 108: Intro to Chem Principles II (spring only)**
  Intermolecular forces, kinetics, thermodynamics and equilibrium, acids and bases, solubility, electrochemistry, descriptive chemistry and a brief introduction to organic, polymer and biological chemistry.

  Format: Three lectures, one recitation and one three-hour laboratory per week.

  This course is appropriate for first-year students.

  Prerequisite: Chem 107

*CHEM 111: Chemical Principles and CHEM: 231 Organic Chemistry I is the recommended sequence for students who have a good high school chemistry background and wish to enter upper-level courses earlier in their schedule.*
**Post-Graduation:**

Potential careers: One of the attractive features of a chemistry degree is the flexibility it offers students with regard to career opportunities. Chemistry majors gain valuable critical reasoning, analytical and laboratory skills that allow them to enter a wide array of graduate and professional programs or find immediate employment in an industrial position.

Notable employers include: pharmaceutical, petroleum and large chemical companies, as well as private laboratories and small industries. Depending upon the industry, the responsibilities of the baccalaureate chemist range from being completely independent to functioning as a technician. Baccalaureate chemists also find employment in sales and marketing, as there is a high level of demand for instruments, chemicals and supplies. Visit [future jobs](http://www.binghamton.edu/chemistry/undergraduate-program/undergraduate-handbook.html#future-jobs) for more information.

**Additional Resources:**

For more resources and information on this major, refer to the links below:

- [About chemistry](http://www.binghamton.edu/chemistry/index.html)
- [Undergraduate handbook](http://www.binghamton.edu/chemistry/undergraduate-program/undergraduate-handbook.html)

For student organizations and social involvement options refer to:

- [Student groups](http://binghamtons.org/executive-vp/current-student-groups/)

**Thank you!**

For more information contact the Chemistry Department at:

pgorman@binghamton.edu
(607) 777-2517