Guilford COLLEGE
5800 West Friendly Ave.
Greensboro, NC 27410
www.guilford.edu

Chemistry

As the science of materials and change, chemistry is rapidly emerging as the discipline at the base of many interdisciplinary subjects such as biotechnology, materials science, molecular biology, and environmental science. The chemistry major at Guilford explores the fundamental principles of chemistry and examines how those principles are applied to the observable world. Chemistry majors will develop chemical reasoning, experimental and research skills, as well as an understanding of the interdisciplinary nature of the science. Students with a major in chemistry will be prepared to work in the chemical industry, pursue graduate research in chemistry (or a related field), or attend medical, dental, or pharmacy school. A chemistry major can lead to many different careers outside chemical or biochemical research. These include teaching, medicine, patent law, business or interdisciplinary areas such as environmental science, forensic science, molecular biology, pharmacology, toxicology, materials science, geochemistry, and chemical physics.

Why Guilford College?

Consistently rated nationally by *The Princeton Review* as well as being one of the 40 colleges in *Colleges that Change Lives* by Loren Pope, Guilford College inspires each student to achieve excellence through an engaging community, rooted in Quaker values, which nurtures creativity and social responsibility.

What can a Guilford education offer you?

- An urban setting near other colleges & universities with an area student population of over 27,000 students
- A consortium agreement with University of North Carolina at Greensboro, Greensboro College, Bennett College, North Carolina A&T State University, Elon University and High Point University provides students with access to courses free of charge
- A college mission statement & core values based on, and consistent with, Quaker testimonies. Guilford's core values are: Community, Diversity, Equality, Excellence, Integrity, Justice & Stewardship.
- A challenging academic program which emphasizes not only academic tracks and the learning process, but also the interconnection between curricular and co-curricular pursuits
- A diverse student population providing a stimulating peer environment
- Excellent study abroad programs in China, England, France, Germany, Ghana, Ireland, Italy, Japan, Mexico, Netherlands, Scotland, Spain, and Wales

The academic program in Chemistry

The Bachelor of Arts and Bachelor of Science degrees are offered in Chemistry
A minor is offered in Chemistry.

Required courses for the Chemistry major

Requirements for the major include the completion of a sequence of introductory and advanced courses in chemistry that introduce students to the main areas of study in chemistry. Course work in the related fields of mathematics and physics is also required to prepare students for upper level courses in chemistry. For the Bachelor of Arts in chemistry, students must complete at least 36 credits in chemistry, among which must be included the courses listed below. For the Bachelor of Science in Chemistry, students must complete 41 credits in chemistry, among which must be included the courses listed below, plus two additional chemistry and mathematics or physics courses.
The following courses are required for both the Bachelor of Arts and Bachelor of Science in chemistry:

CHEM 111 and 112: Chemical Principles I and II
CHEM 231 and 232: Organic Chemistry I and II
CHEM 235: Integrated Laboratory for Organic Chemistry
CHEM 331: Physical Chemistry: Thermodynamics & Kinetics
CHEM 341: Instrumental Analysis
CHEM 342: Inorganic and Materials Chemistry
CHEM 345: Integrated Laboratory for Inorganic Chemistry
CHEM 400: Chemistry Seminar
Any 400-level chemistry course.

An internship (at the 390 level) or independent study approved by the department can substitute for an upper-level chemistry course. With the approval of the department, students can also take 400-level (and above) courses at consortium colleges to fulfill this requirement.

For the **Bachelor of Science** major in chemistry, additional required chemistry and physics or math courses are:

- CHEM 332: Physical Chemistry: Quantum Mechanics and Spectroscopy
- CHEM 336: Integrated Laboratory for Physical Chemistry
- MATH 225: Multivariable Calculus, PHYS 223: Classical and Modern Physics III, or
  PHYS 320: Mathematical Physics

For both the **Bachelor of Science** and **Bachelor of Arts** majors in chemistry, the prerequisite courses for required courses for the major are

- MATH 121 and 122: Calculus I and II or MATH 123: Accelerated Calculus
- PHYS 121 and 122: Classical and Modern Physics and II or PHYS 211 and 212: College Physics I and II.
- PHYS 121 and 122 are recommended for Bachelor of Science majors in chemistry

Majors who intend to pursue graduate study are strongly encouraged to obtain experience in computer programming at the level of Introduction to Computer Programming (CMIT 140).

Unique Features of the program

Key features of the Guilford chemistry program are the emphasis on research and direct student access to computers and instrumentation. Students in chemistry at all levels are encouraged to participate in research, whether integrated into courses, through collaboration with faculty during the semester, or through summer research experiences at Guilford or other institutions. In addition, students are encouraged to pursue the practical applications of chemistry through internships. State-of-the-art facilities are available in the Frank Family Science Center for student/faculty research.

Internship and Research Opportunities

Majors are strongly encouraged to participate in an industrial or governmental internship, pursue undergraduate research during the semester or summer, and/or study abroad as part of their experience at Guilford. Recent locations where Guilford Chemistry students have completed internships or summer research include:

- Greensboro Water Department
- TransTech Pharma
- Syngenta Crop Protection
- University of Kentucky
- Georgetown University
- Duke University
- Tulane University

Where do graduates go?

- Graduate School (PhD): University of Oregon, University of North Carolina at Chapel Hill, University of Florida, University of Virginia, Michigan State University, Cornell University
- Employment: Syngenta Crop Protection, Louisiana Office of Environmental Quality, University of Michigan, LabCorp, Viking Polymer, Guilford County Schools
- Professional School: Wake Forest University (MD), East Carolina University (MD), West Virginia University (MD/PhD), University of North Carolina at Chapel Hill (MD/PhD, PharmD)

Faculty

Robert M. Whitnell, Professor, Chair; rwhitnel@guilford.edu
Anne G. Glenn, Professor
David F. MacInnes, Jr., Professor
Gail Webster, Assistant Professor
David Millican, Visiting Assistant Professor

For additional information about Chemistry at Guilford College visit: www.guilford.edu/academics