CHEMISTRY

Phone: (845) 257-3790
Location: Coykendall Science Building Room 105

The Department of Chemistry at New Paltz offers both undergraduate and masters degree programs. Three undergraduate programs leading to liberal arts degrees are available: the general chemistry major, the American Chemical Society (ACS)-approved chemistry major, and the chemistry major with biochemistry emphasis.

A student who obtains an ACS-approved degree is eligible for employment as a chemist in industry or government. The ACS-approved program also prepares students for graduate study and for professional training in medicine, dentistry, and veterinary medicine. Course offerings allow chemistry majors to obtain a broad background in several areas of chemistry.

The biochemistry emphasis is designed for the student interested in biochemistry or health-related sciences requiring a substantial background in chemistry. This program provides excellent preparation for health professional training, as well as for graduate study in clinical chemistry, physiology, and medicinal chemistry. Students take core courses in chemistry and biology and complete the year-long biochemistry sequence.

The general chemistry major requires fewer advanced courses than the ACS approved program. However, students take, with advisement, the same core courses that provide theoretical and hands-on education in the major areas of chemistry. Students are able to combine a chemistry major with prelaw, business, or teaching programs. This degree with selected courses in biology can prepare students for medical school entrance requirements. Preparation for a non-laboratory career in chemistry could include management or marketing courses offered by the business program at New Paltz.

The American Chemical Society’s Committee on Professional Training includes the New Paltz Chemistry Department on its list of approved departments. This is the equivalent to professional accreditation of the liberal arts curriculum. Prospective chemistry majors should consult with the department chair as soon as possible after admission to the College and should take MAT251 and CHE201 & CHE211 in the fall semester of their freshman year.

In addition to these programs, the Departments of Chemistry and Biology offer an interdisciplinary major in Biochemistry leading to a Bachelor of Science degree.

A minimum grade of C- is required to advance from CHE201 to CHE202, from CHE202 to CHE318, and from CHE318 to CHE319. A minimum grade of C- in CHE319 is required to enroll in BCM461.

Majors

- Chemistry (General Degree) (http://catalog.newpaltz.edu/undergraduate/majors-minors/science-engineering/chemistry/major-chemistry-general-degree)
- Chemistry (ACS Approved Degree) (http://catalog.newpaltz.edu/undergraduate/majors-minors/science-engineering/chemistry/major-chemistry-acs-approved-degree)
- Chemistry (Biochemistry Emphasis) (http://catalog.newpaltz.edu/undergraduate/majors-minors/science-engineering/chemistry/major-chemistry-biochemistry-emphasis)

- BS in Biochemistry (http://catalog.newpaltz.edu/undergraduate/majors-minors/science-engineering/chemistry/bs-biochem)

Minor

- Chemistry (http://catalog.newpaltz.edu/undergraduate/majors-minors/science-engineering/chemistry/minor-chemistry)

Undergraduate

CHE100. Environmental Chemistry . 3 Credits.
Principles of chemistry behind the effects of such environmental problems as acid rain, ozone layer depletion, atmospheric and aquatic pollution, global warming. Evaluation of experimental data leading scientists to current conclusions regarding these environmental issues.

Prerequisites:
- Math Placement Level with a score of 3 or MAT 151 with a minimum grade of C- or MAT 093 with a minimum grade of C- or MAT 120 with a minimum grade of C-

Restrictions:
- Must have the following level: Undergraduate
- Must have the following field(s) of study (major, minor or concentration):
  - Adolescence Ed: Biology (031A)
  - Geology (510)
  - Biology (101)
  - Physics (108)
  - Chemistry (509)
  - 7-12: Biology (031)
  - 7-12: Chemistry (032)

CHE110. Food, Medicine and Drugs. 3 Credits.
Biochemical consequences of substances we ingest: nutritional requirements, properties and metabolism of foods, vitamins and minerals; selected examples of actions of medicines and mechanisms of action of addictive drugs.

Restrictions:
- Must have the following level: Undergraduate

CHE182. Chemistry in Art . 3 Credits.
Materials used in the production of art works, including their sources, properties, and applications. Topics to be covered are: metals, their use in sculpture, printmaking, and gold and silver work; paper; black and white photography; pigments and dyes; coatings (varnishes and synthetic polymers). Designed for non-science majors.

Prerequisites:
- Math Placement Level with a score of 3 or MAT 151 with a minimum grade of C- or MAT 093 with a minimum grade of C- or MAT 120 with a minimum grade of C-

Restrictions:
- Must have the following level: Undergraduate
- Must have the following field(s) of study (major, minor or concentration): Chemistry (509)
CHE191. Medicinal Chemistry. 3 Credits.
An exploration of the intersection between chemistry and medicine; covering some basic chemistry; the structure of the human body at various scales; and use of pharmaceuticals, including the chemical basis of how they interact with the body.
Prerequisites:
• Math Placement Level with a score of 3
Restrictions:
• Must have the following level: Undergraduate

CHE193. Chemistry Selected Topic. 3-12 Credits.
Selected topics courses are regularly scheduled courses that focus on a particular topic of interest. Descriptions are printed in the Schedule of Classes each semester. Selected topics courses may be used as elective credit and may be repeated for credit, provided that the topic of the course changes.
Restrictions:
• Must have the following level: Undergraduate

CHE199. Modular Course. 0 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE201. General Chemistry I. 3 Credits.
Principles governing chemical change in relation to the atomicity of matter, atomic structure and the periodic system of the elements.
Prerequisites:
• (Math Placement Level with a score of 4 or MAT 152 with a minimum grade of C- or MAT 193 with a minimum grade of C- or MAT 153 with a minimum grade of C-) and CHE 211 (may be taken concurrently) with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE202. General Chemistry II. 3 Credits.
Kinetics, thermodynamics, equilibria and electrochemistry.
Prerequisites:
• CHE 201 with a minimum grade of C- and CHE 211 with a minimum grade of D- and CHE 212 (may be taken concurrently) with a minimum grade of D- and (Math Placement Level with a score of 4 or MAT 152 with a minimum grade of C-)
Restrictions:
• Must have the following level: Undergraduate

CHE211. General Chemistry I Lab. 1 Credit.
Laboratory work complements the lecture material covered in CHE 201.
Restrictions:
• Must have the following level: Undergraduate

CHE212. General Chemistry II Lab. 1 Credit.
Laboratory work complements the lecture material covered in CHE202. THERE WILL BE AN ADDITIONAL $30.00 FEE ASSOCIATED WITH THIS COURSE.
Prerequisites:
• Math Placement Level with a score of 4 and CHE 201 with a minimum grade of D-

CHE293. Chemistry Selected Topic. 3-12 Credits.
Selected topics courses are regularly scheduled courses that focus on a particular topic of interest. Descriptions are printed in the Schedule of Classes each semester. Selected topics courses may be used as elective credit and may be repeated for credit, provided that the topic of the course changes.
Restrictions:
• Must have the following level: Undergraduate

CHE295. Indep Study Chemistry. 1-12 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE296. Departmental Elective. 0 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE299. Modular Course. 0 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE303. Introduction to Analytical Chemistry. 4 Credits.
Lecture and laboratory work in gravimetric, volumetric, and elementary instrumental analysis. Application of statistics to analytical chemistry.
Prerequisites:
• CHE 202 with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE306. Organic Chemistry I Lab. 1 Credit.
Laboratory meets once a week and will provide practical experience in some fundamental techniques of organic chemistry.
Prerequisites:
• CHE 202 with a minimum grade of C-

CHE309. Organic Chemistry II Lab. 1 Credit.
Laboratory work will utilize the microscale techniques employed in Organic Chemistry I to the study of organic reactions. THERE WILL BE AN ADDITIONAL $30.00 FEE ASSOCIATED WITH THIS COURSE.
Prerequisites:
• CHE 202 with a minimum grade of D-

CHE314. Inorganic Chemistry. 3 Credits.
Inorganic Chemistry builds on the foundation provided in General and Organic Chemistry. The chemistry of the full periodic table will be discussed. Emphasis will be placed on modern techniques, theories, and applications.
Prerequisites:
• CHE 202 with a minimum grade of D- and CHE 318 with a minimum grade of D-
CHE318. Organic Chemistry I . 3 Credits.
Structural theory and its application to the study of the properties of carbon compounds.
Prerequisites:
• (CHE 202 with a minimum grade of C- and CHE 212 with a minimum grade of D-) and CHE 306 (may be taken concurrently) with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE319. Organic Chemistry II . 3 Credits.
Continuation of Organic Chemistry I.
Prerequisites:
• (CHE 318 with a minimum grade of C- and CHE 306 with a minimum grade of D-) and CHE 309 (may be taken concurrently) with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE320. Physical Chemistry Recitation. 1 Credit.
Students will work in groups to solve problems that deal with concepts in thermodynamics and kinetics. These in-class activities will reinforce concepts learned in Physical Chemistry I (CHE 321).
Prerequisites:
• (CHE 201 with a minimum grade of D- and MAT 252 with a minimum grade of D- and CHE 202 with a minimum grade of D- and PHY 211 with a minimum grade of D- and PHY 212 with a minimum grade of D- and MAT 251 with a minimum grade of D-)
Restrictions:
• Must have the following field(s) of study (major, minor or concentration):
  • Chemistry (509)
  • Adolescence Ed: Chemistry (441)

CHE321. Physical Chemistry I . 3 Credits.
Study of ideal and real gases, kinetics, thermodynamics, phase and chemical equilibrium, electrochemistry.
Prerequisites:
• CHE 202 with a minimum grade of D- and PHY 202 with a minimum grade of D- and (MAT 341 (may be taken concurrently) with a minimum grade of D- or (MAT 353 (may be taken concurrently) with a minimum grade of D- and PHY 211 with a minimum grade of D- and PHY 353 with a minimum grade of D- and MAT 251 with a minimum grade of D-)
Restrictions:
• Must have the following level: Undergraduate

CHE322. Physical Chemistry II . 3 Credits.
Introduction to quantum mechanics and atomic and molecular spectroscopy.
Prerequisites:
• CHE 202 with a minimum grade of C- and PHY 202 with a minimum grade of D- and (MAT 341 (may be taken concurrently) with a minimum grade of D- or (MAT 353 (may be taken concurrently) with a minimum grade of D- and MAT 362 (may be taken concurrently) with a minimum grade of D-)
Restrictions:
• Must have the following level: Undergraduate

CHE323. Experimental Physical Chemistry . 3 Credits.
Lecture and laboratory work in methodology and techniques used in physical chemistry. Stress design of experiments, thorough analysis of data, and the writing of scientific reports.
Prerequisites:
• CHE 322 with a minimum grade of D- and CHE 321 with a minimum grade of D-

CHE324. Seminar in Chemistry. 1-12 Credits.
Selected topics in the chemistry of inorganic, organic, physical or analytical chemistry. May be repeated for credit with a change in topic. No student may count more than 12 credits in CHE 322 on their graduation transcript.
Restrictions:
• Must have the following level: Undergraduate

CHE325. Chemistry Selected Topic. 1-12 Credits.
Selected topics courses are regularly scheduled courses that focus on a particular topic of interest. Descriptions are printed in the Schedule of Classes each semester. Selected topics courses may be used as elective credit and may be repeated for credit, provided that the topic of the course changes.
Restrictions:
• Must have the following level: Undergraduate

CHE326. Departmental Elective. 0 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE328. Modular Course. 0 Credits.
Restrictions:
• Must have the following level: Undergraduate

CHE407. Instrumental Techniques . 4 Credits.
Familiarization with the modern instruments and techniques used in chemistry.
Prerequisites:
• CHE 303 with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE415. Advanced Inorganic Chem Lab. 1 Credit.
Inorganic Chemistry Laboratory puts into practice the principles learned in Inorganic Chemistry. Modern laboratory techniques will be taught and used to explore the chemistry of s, p, and d-block elements.
Prerequisites:
• CHE 202 with a minimum grade of D- and CHE 319 with a minimum grade of D- and CHE 314 (may be taken concurrently) with a minimum grade of D-
Restrictions:
• Must have the following level: Undergraduate

CHE485. Seminars in Chemistry . 2 Credits.
A series of lecture and discussion sessions conducted by distinguished visiting scientists and faculty members and students of the chemistry department. Topics are of current interest in chemistry, many of which cannot be covered in traditional courses.
Restrictions:
• Must have the following level: Undergraduate

CHE490. Senior Research in Chemistry. 3 Credits.
Student undertakes a program of research under the guidance of a faculty advisor.

Restrictions:
- Must have the following level: Undergraduate
- Must have the following field(s) of study (major, minor or concentration):
  - Chemistry (509)
  - Adolescence Ed: Chemistry (441)

CHE493. Chemistry Selected Topic. 3-12 Credits.
Selected topics courses are regularly scheduled courses that focus on a particular topic of interest. Descriptions are printed in the Schedule of Classes each semester. Selected topics courses may be used as elective credit and may be repeated for credit, provided that the topic of the course changes.

Restrictions:
- Must have the following level: Undergraduate
- Must have the following field(s) of study (major, minor or concentration):
  - Chemistry (509)
  - Adolescence Ed: Chemistry (441)

CHE494. Fieldwork In Chemistry. 0 Credits.
Restrictions:
- Must have the following level: Undergraduate

CHE495. Indep Study Chemistry. 1-12 Credits.
Restrictions:
- Must have the following level: Undergraduate