Chemistry Major and Minor

www.Chem.Pitt.edu
Revised: 05/2019

Chemistry is the most central of sciences. It is involved in natural processes occurring in living things, the earth, the oceans, and the atmosphere. The chemical industry provides materials to feed, clothe, and house mankind, drugs to combat disease, and processes to provide energy for societal needs. Chemistry plays an ever-increasing role in our society, particularly in high technology fields such as molecular biology, microelectronics, drug design and ceramics. The bachelor’s degree in chemistry consists of core courses in four primary areas: analytical, organic, physical, and inorganic, and electives such as polymer science. We also offer special options for students with specific interests in combining chemistry with other subjects, such as bioscience. These options involve additional courses in the chosen second discipline, together with an allowed waiver of selected required science courses. The option courses will allow you to focus some free credits into a sequence that will give you an in-depth introduction to the subject and will be directly relevant to your career goals. We stress that none of these special options requires more than 120 credits to graduate.

The degree in chemistry prepares students for careers in business and industry, or for graduate study in chemistry. Combined with core biology courses, the chemistry major is frequently selected as the preferred major for admission to the graduate health professions, including medical and dental school. In combination with the education option, the chemistry major prepares a student to enter a certification program leading to a career in secondary science teaching. Chemists at all levels of training have a wide variety of industrial and corporate career opportunities: in agricultural chemistry, food chemistry, environmental science, petrochemicals, pharmaceuticals, semiconductors and electronics, fine chemicals, as well as in basic research. Many opportunities are available for chemistry majors with skills in business (sales, technical marketing, management), communications (technical writing, journalism), and education. The option programs are designed specifically to meet the demand for professionals trained in these and other interdisciplinary fields.

Required courses for the Chemistry major

The chemistry curriculum provides a rigorous, comprehensive background in the four primary areas of chemistry. The program is appropriate for students who plan to attend graduate school or pursue American Chemical Society (ACS) certification. The major requires the completion of 61 credits distributed as follows.

Chemistry courses

CHEM 0110 General Chemistry 1
CHEM 0120 General Chemistry 2
CHEM 0250 Analytical Chemistry
CHEM 0260 Analytical Chemistry Lab
CHEM 0310 Organic Chemistry 1
CHEM 0320 Organic Chemistry 2
CHEM 0345 Organic Chemistry
CHEM 1000 Mathematics for Chemists *
CHEM 1130 Inorganic Chemistry
CHEM 1140 Inorganic Chemistry Lab
CHEM 1250 Instrumental Analysis
CHEM 1255 Instrumental Analysis Lab
CHEM 1410 Physical Chemistry 1
CHEM 1420 Physical Chemistry 2
CHEM 1430 Physical Chemistry Lab 1
CHEM 1440 Physical Chemistry Lab 2

* May take MATH 0240 in place of this course.

Mathematics and Physics courses

MATH 0220, 0230 Analytic Geometry and Calculus 1, 2
PHYS 0174, 0175, 0219 Physics for Science and Engineering 1, 2, and Lab

Science electives (2-credit minimum)

BIOSC: 0350, 0370, 1000, 1500, 1810, 1820, 1830, 1850, 1940
CHEM: 1260, 1310, 1380, 1460, 1600, 1605, 1620, 1700, 1710, 1720, 1810, courses above 2000 except 2700
CS: 0441, 0445
GEOL 1001
MATH 0250
STAT 1000

Note: Students seeking ACS Certification must take either BIOSC 1000 or CHEM 1810.

Grade requirements

A minimum GPA of 2.0 in departmental courses is required for graduation.

Satisfactory/No Credit option

CHEM 0110, CHEM 0120, and all required Mathematics and Physics courses can be taken on an S/NC basis.

Writing (W) requirement

Students must complete at least one W-course in the major.

Honors major requirements

To earn departmental honors in chemistry, the student must have an overall minimum GPA of 3.0:
- maintain a minimum GPA of 3.25 in all required CHEM courses;
- present two credits of CHEM 1710 Undergraduate Research;
- present one credit of CHEM 1711 Undergraduate Research Writing.
Checklist and suggested plan of study for the Chemistry major

Fall freshman year
- CHEM 0110 or CHEM 0710
- MATH 0220

Spring freshman year
- CHEM 0120 or 0720
- MATH 0230 or 0235

Fall sophomore year
- CHEM 0310 or 0730
- CHEM 1000 or MATH 0240
- PHYS 0174 or 0475

Spring sophomore year
- CHEM 0320 or 0740
- CHEM 0345
- PHYS 0175 or 0476

Fall junior year
- CHEM 0250
- CHEM 0260
- CHEM 1410
- PHYS 0219 or 0577

Spring junior year
- CHEM 1250
- CHEM 1255
- CHEM 1420
- CHEM 1430

Fall senior year
- CHEM 1130
- CHEM 1440
- (Science Elective)

Spring senior year
- CHEM 1140

Curricular options for the Chemistry major
Each option allows for the waiver of CHEM 1140, CHEM 1440, and the science elective.

Bioscience option (14-credit minimum)
- BIOSC 0057
- BIOSC 0150 / BIOSC 0715
- BIOSC 0067
- BIOSC 0160 / BIOSC 0716

Two of the following
- CHEM 1810 or BIOSC 1000 or BIOSC 1810
- BIOSC 0350 / BIOSC 0355
- BIOSC 0370
- BIOSC 1500

Note: This option allows the student to take PHYS 0110, 0111, and 0212 in lieu of PHYS 0174, 0175, and 0219.

Business option (18-credit minimum)
- ECON 0100 or ECON 0110 or ECON 0120
- BUSERV 1920 or BUSACC 0030
- BUSERV 1925 or BUSACC 0040
- BUS (BUSERV/CBA Elective)
- BUS (BUSERV/CBA Elective)
- BUS (BUSERV/CBA Elective)

Note: This option allows the student to waive CHEM 1420 also.

Communications option (12-credit minimum)
- ENGCMP 0400

Three of the following
- COMMRC 0320
- COMMRC 1105
- ENGWRT 0550
- ENGWRT 1310
- ENGWRT 1320
- ENGWRT 1330
- ENGWRT 1340
- ENGWRT 1394
- LING 0080
- LING 1000

Education option: (13-credit minimum)
- BIOSC 0057
- BIOSC 0150 or BIOSC 0715
- IL 1580
- PSYED 1001 or PSYED 1003

Note: The note under option 1 also applies to this option.

Material science option
- ENGR 0022 or CHEM 1540
- CHEM 1600
- CHEM 1605
- CHEM 1620

Checklist for the Chemistry minor
Students must apply for any official Minor they will complete or have completed at the time they apply for graduation.

Core requirements
One of the following
- CHEM 0110 General Chemistry 1
- CHEM 0710 UHC General Chemistry 1
- CHEM 0760 UHC General Chemistry for Engineers 1
- CHEM 0960 General Chemistry for Engineers 1

One of the following
- CHEM 0120 General Chemistry 2
- CHEM 0720 UHC General Chemistry 2
- CHEM 0770 UHC General Chemistry for Engineers 2
- CHEM 0970 General Chemistry for Engineers 2

Advanced lecture requirements (3 courses)
- CHEM 0250 Introduction to Analytical Chemistry
- CHEM 0310 / BIOSC 0730 Organic Chemistry 1
- CHEM 0320 / BIOSC 0740 Organic Chemistry 2
- CHEM 1130 Inorganic Chemistry
- CHEM 1250 Instrumental Analysis
- CHEM 1410 Physical Chemistry 1
- CHEM 1420 Physical Chemistry 2
- BIOSC 1000 Biochemistry
- BIOSC 1810 Macromolecular Structure and Function

Laboratory requirements (2 credits)
- CHEM 0260 Introduction to Analytical Chemistry Lab
- CHEM 0345 Organic Laboratory
- CHEM 1140 Advanced Inorganic Laboratory
- CHEM 1255 Instrumental Analysis Lab
- CHEM 1430 Physical Chemistry Laboratory 1
- CHEM 1440 Physical Chemistry Laboratory 2