Chemistry Major and Minor

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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

0110, 0120 General Chemistry 1, 2
0250, 0260 Analytical Chemistry and Lab
0310, 0320 Organic Chemistry 1, 2
0330, 0340 Organic Chemistry Lab 1, 2
1130, 1140 Inorganic Chemistry and Lab
1250, 1255 Instrumental Analysis and Lab
1410, 1420 Physical Chemistry 1, 2
1430, 1440 Physical Chemistry Lab 1, 2

Mathematics and Physics courses

0220, 0230, 0240 Analytic Geometry and Calculus 1, 2, 3
0174, 0175, 0219 Physics for Science and Engineering 1, 2, and Lab

Science electives (2-credit minimum)

BIOSC: 0350, 0355, 0370, 1000, 1500, 1810, 1820, 1830
CHEM: 1260, 1310, 1380, 1450, 1460, 1480, 1600, 1605, 1620, 1700, 1710, 1720, 1810, courses above 2000 except 2700
CS: 0441, 0445
GEOG: 1001, 1500, 2521
MATH: 0250, 1180, 1185
STAT: 1151

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 (1) W-course in the major.

Related area: Mathematics satisfies the related area requirement for the CHEM 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.

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Checklist and suggested plan of study for the Chemistry major

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

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

Fall sophomore year
- ______ CHEM 0310 or 0730
- ______ CHEM 0330
- ______ MATH 0240
- ______ PHYS 0174 or 0475

Spring sophomore year
- ______ CHEM 0320 or 0740
- ______ CHEM 0340 or 0750
- ______ 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

Checklist for the Chemistry minor
Note: 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
- ______ CHEM 0120
- ______ CHEM 0710
- ______ CHEM 0720
- ______ CHEM 0960
- ______ CHEM 0970

One of the following
- ______ CHEM 0110
- ______ CHEM 0120
- ______ CHEM 0710
- ______ CHEM 0720
- ______ CHEM 0960
- ______ CHEM 0970

Advanced lecture requirements (3 courses)
- ______ CHEM 0310 / BIOSC 0730 Organic
- ______ CHEM 0320 / BIOSC 0740
- ______ CHEM 0250 Analytical
- ______ CHEM 1250
- ______ CHEM 1410 Physical
- ______ CHEM 1420
- ______ CHEM 1130 Inorganic
- ______ CHEM 1810
- ______ BIOSC 1000 / BIOSC 1810

Laboratory requirements (2 courses)
- ______ CHEM 0330 Organic
- ______ CHEM 0340 / CHEM 0750
- ______ CHEM 0260 Analytical
- ______ CHEM 1255
- ______ CHEM 1430 Physical
- ______ CHEM 1440
- ______ CHEM 1140 Inorganic

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 0050
- ______ BIOSC 0150 / BIOSC 0715
- ______ BIOSC 0060
- ______ BIOSC 0160 / BIOSC 0716
- ______ 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 / ECON 0110 / ECON 0120
- ______ BUSERV 1920 / BUSACC 0030
- ______ BUSERV 1925 / BUSACC 0040
- ______ BUS 1810 (BUSERV/CBA Elective)
- ______ BUS 1820 (BUSERV/CBA Elective)
- ______ (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 0050
- ______ BIOSC 0150 / BIOSC 0715
- ______ IL 1580
- ______ PSYED 1001 / 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