Degree Requirements

For the Bachelor of Science degree in Chemistry, a minimum of 124 credits is required:

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18-24 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

Requirements for the Major

Each student must earn at least a grade of C in each 300- and 400-level course in the major field.

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Code | Title                                      | Credits |
-----|--------------------------------------------|---------|
Biol 110 | Biology: Basic Concepts and Biodiversity | 4       |
CHEM 110 | Chemical Principles I                     | 3       |
CHEM 111 | Experimental Chemistry I                  | 1       |
CHEM 112 | Chemical Principles II                    | 3       |
CHEM 113 | Experimental Chemistry II                 | 1       |
CHEM 210 | Organic Chemistry I                       | 3       |
CHEM 212 | Organic Chemistry II                      | 3       |
CHEM 213 | Laboratory in Organic Chemistry           | 2       |
CHEM 227 | Analytical Chemistry                      | 4       |
CHEM 358 | Literature, Conduct and Safety in the Chemical Sciences | 3 |
CHEM 413 | Chemistry of the Elements                 | 4       |
CHEM 431W | Organic and Inorganic Preparations       | 4       |
CHEM 440 | Instrumental Analysis                     | 3       |
CHEM 441 | Instrumental Analysis Laboratory          | 1       |
CHEM 450 | Physical Chemistry - Thermodynamics       | 3       |
CHEM 451 | Experimental Physical Chemistry I         | 1       |
CHEM 452 | Physical Chemistry - Quantum Chemistry    | 3       |
CHEM 453 | Experimental Physical Chemistry II        | 1       |
CHEM 472 | General Biochemistry I                    | 3       |
ENGL 202C | Effective Writing: Technical Writing     | 3       |
MATH 140 | Calculus With Analytic Geometry I         | 4       |
MATH 141 | Calculus with Analytic Geometry II        | 4       |
MATH 230 | Calculus and Vector Analysis              | 4       |
PHYS 211 | General Physics: Mechanics                | 4       |
PHYS 212 | General Physics: Electricity and Magnetism| 4       |

Additional Courses

Additional Courses: Require a grade of C or better

Select 3 credits from the following:

- BMB 402 | General Biochemistry
- MATH 250 | Ordinary Differential Equations
- STAT 401 | Experimental Methods

Select 3 credits from the following:

- CHEM 494 | Chemical Research
- CHEM 495 | Internship
- CHEM 496 | Independent Studies

Select 6 credits of 400-level CHEM courses (excluding CHEM 494, CHEM 495, and CHEM 496)

Supporting Courses and Related Areas

Select 12 credits from school approved list. 1

1 Students may apply up to 6 credits of ROTC.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)

- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

Knowledge Domains

- Arts (GA): 6 credits
- Health and Wellness (GHW): 3 credits
- Humanities (GH): 6 credits
- Social and Behavioral Sciences (GS): 6 credits
- Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)

- Inter-Domain or Approved Linked Courses: 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3
credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

**Cultures Requirement**
6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

**Writing Across the Curriculum**
3 credits required from the college of graduation and likely prescribed as part of major requirements.

**Total Minimum Credits**
A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

**Quality of Work**
Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

**Limitations on Source and Time for Credit Acquisition**
The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 [http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80](http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.