BACHELOR OF ARTS WITH A MAJOR IN CHEMISTRY (STEM)

Engaging in cutting-edge research alongside expert faculty and graduate students, students in the bachelor of arts in chemistry program study problems of critical importance to the world. The program provides a hands-on approach to modern laboratory practices and instrumentation supported by curricula in analytical, inorganic, organic, and physical chemistry. Pairing academic rigor with rich research in the nation’s capital, students graduate with the expertise to pursue opportunities in a variety of areas. Chemistry is a powerful springboard to rich and rewarding careers in areas such as patent law, medicine, pharmacology and pharmacy, clinical and forensic laboratories, and material science or academics.

This is a STEM designated program.

Visit program website (https://chemistry.columbian.gwu.edu/) for additional information.

ADMISSIONS

For information about the admission process, including deadlines, visit the Office of Undergraduate Admissions website (https://undergraduate.admissions.gwu.edu/). Applications can be submitted via the Common Application (https://go.gwu.edu/commonapp/).

Supporting documents not submitted online should be mailed to:
Office of Undergraduate Admissions
The George Washington University
800 21st St NW Suite 100
Washington, DC 20052

For questions visit undergraduate.admissions.gwu.edu/contact-us (http://undergraduate.admissions.gwu.edu/contact-us/).

REQUIREMENTS

The Department of Chemistry offers the bachelor of arts degree, which is designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical. It should meet the needs of students preparing to enter the fields of medicine, law, dentistry, and business, among others.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (https://bulletin.gwu.edu/arts-sciences/#degreeregulationstext) and the required curriculum, below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 1111 &amp; CHEM 1112</td>
<td>General Chemistry I and General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 2122 &amp; CHEM 2123W</td>
<td>Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory</td>
<td></td>
</tr>
<tr>
<td>MATH 1231</td>
<td>Single-Variable Calculus I *</td>
<td></td>
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<tr>
<td>MATH 1232</td>
<td>Single-Variable Calculus II</td>
<td></td>
</tr>
<tr>
<td>PHYS 1021 &amp; PHYS 1022 or PHYS 1025</td>
<td>University Physics I and University Physics II</td>
<td></td>
</tr>
<tr>
<td>or PHYS 1025</td>
<td>University Physics I with Biological Applications</td>
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*Or MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II.

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<tbody>
<tr>
<td>CHEM 2151 &amp; CHEM 2153</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
<td></td>
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<tr>
<td>CHEM 2152 &amp; CHEM 2154</td>
<td>Organic Chemistry II and Organic Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>CHEM 3171 &amp; CHEM 3172</td>
<td>Physical Chemistry I and Physical Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 3173</td>
<td>Physical Chemistry Laboratory</td>
<td></td>
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<tr>
<td>CHEM 3165</td>
<td>Biochemistry I</td>
<td></td>
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<tr>
<td>CHEM 4122</td>
<td>Instrumental Analytical Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 4134</td>
<td>Inorganic Chemistry</td>
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</table>

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

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</tr>
<tr>
<td>CHEM 1112</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>MATH 1231 or MATH 1220 &amp; MATH 1221</td>
<td>Single-Variable Calculus I and Calculus with Precalculus I and Calculus with Precalculus II</td>
<td></td>
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</tbody>
</table>
### Second Year
- **MATH 1232** Single-Variable Calculus II
- **CHEM 2122** Introductory Quantitative Analysis
- **CHEM 2151** Organic Chemistry I
- **CHEM 2153** Organic Chemistry Laboratory I
- **CHEM 2152** Organic Chemistry II
- **CHEM 2154** Organic Chemistry Laboratory II
- **PHYS 1021** University Physics I
  - or **PHYS 1025** University Physics I with Biological Applications
- **PHYS 1022** University Physics II
  - or **PHYS 1026** University Physics II with Biological Applications

### Third Year
- **CHEM 2123** Introductory Quantitative Analysis Laboratory
- **CHEM 3171** Physical Chemistry I
- **CHEM 3172** Physical Chemistry II
- **CHEM 3173** Physical Chemistry Laboratory

### Fourth Year
- **CHEM 3165** Biochemistry I (if not taken in the third year)
- **CHEM 4122** Instrumental Analytical Chemistry
- **CHEM 4134** Inorganic Chemistry (if not taken in the third year)

### General Education

In addition to the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/), undergraduate students in Columbian College must complete a further, College-specific general education curriculum —Perspective, Analysis, Communication (G-PAC) (https://bulletin.gwu.edu/arts-sciences/gpac/) as well as the course **CCAS 1001 First-Year Experience**. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

**Coursework (https://bulletin.gwu.edu/university-regulations/general-education/#generaleducationtext) for the University General Education Requirement is distributed as follows:**

- One course in critical thinking in the humanities.
- Two courses in critical thinking, quantitative reasoning, or scientific reasoning in the social sciences.
- One course that has an approved oral communication component.
- One course in quantitative reasoning (must be in mathematics or statistics).
- One course in scientific reasoning (must be in natural and/or physical laboratory sciences).
- **UW 1020** (https://bulletin.gwu.edu/search/?P=UW%201020) University Writing (4 credits).
- After successful completion of UW 1020, 6 credits distributed over at least two writing in the discipline (WID) courses taken in separate semesters. WID courses are designated by a "W" appended to the course number.

**Coursework for the CCAS G-PAC requirement is distributed as follows:**

- Arts—one approved arts course that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or cross-cultural perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Local or civic engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or physical science—one additional approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Humanities—one additional approved humanities course that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- **CCAS 1001 First-Year Experience**

**Certain courses are approved to fulfill GPAC requirements in more than one category.**

Courses taken in fulfillment of G-PAC requirements may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.
Lists of approved courses in the above categories are included on each undergraduate major’s (https://bulletin.gwu.edu/arts-sciences/#majorstext) page in this Bulletin.

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take CHEM 4195 Undergraduate Research or CHEM 4195W Undergraduate Research for at least 3 credits over two semesters. In addition to the final report for CHEM 4195 or CHEM 4195W, a poster or oral presentation is required.