BACHELOR OF ARTS WITH A MAJOR IN CHEMISTRY

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.

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

ADMISSIONS

For more information on the admission process, please visit the Office of Undergraduate Admissions website. Applications may be submitted via the Common Application.

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

Contact for questions:
gwadm@gwu.edu or 202-994-6040

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 (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext) and the required curriculum, below:

**Prerequisite courses for the bachelor of arts degree:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1111 &amp; CHEM 1112</td>
<td>General Chemistry I and General Chemistry II</td>
<td></td>
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</tbody>
</table>

**Required courses:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 2151 &amp; CHEM 2153</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
<td></td>
</tr>
<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>
</tr>
<tr>
<td>CHEM 3165</td>
<td>Biochemistry I</td>
<td></td>
</tr>
<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.

**First Year**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>CHEM 1111</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 1112</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>MATH 1231*</td>
<td>Single-Variable Calculus I</td>
<td></td>
</tr>
<tr>
<td>MATH 1232</td>
<td>Single-Variable Calculus II</td>
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</table>

**Second Year**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 2122</td>
<td>Introductory Quantitative Analysis</td>
<td></td>
</tr>
<tr>
<td>CHEM 2151</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 2153</td>
<td>Organic Chemistry Laboratory I</td>
<td></td>
</tr>
<tr>
<td>CHEM 2152</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 2154</td>
<td>Organic Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>PHYS 1021 or 1025</td>
<td>University Physics I</td>
<td></td>
</tr>
</tbody>
</table>
PHYS 1022 or 1026
MATH 1232 (if not taken in the first year)

**University Physics II**
**Single-Variable Calculus II**

**Third Year**

CHEM 2123
CHEM 3171
CHEM 3172
CHEM 3173

**Introductory Quantitative Analysis Laboratory**
**Physical Chemistry I**
**Physical Chemistry II**
**Physical Chemistry Laboratory**

**Fourth Year**

CHEM 3165 (if not taken in the junior year)
CHEM 4122
CHEM 4134 (if not taken in the junior year)

**Biochemistry I**
**Instrumental Analytical Chemistry**
**Inorganic Chemistry**

**Or** MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II

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### GENERAL EDUCATION

In addition to the University General Education Requirement (http://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) (http://bulletin.gwu.edu/arts-sciences/gpac/) as well as CCAS 1001. 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 for the University General Education Requirement is distributed as follows:**

- **Writing**—4 credits in UW 1020 University Writing and 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.
- **Humanities**—one approved humanities course that involves critical thinking skills.
- **Mathematics or statistics**—one approved course in either mathematics or statistics.
- **Natural or physical science**—one approved laboratory course that employs the process of scientific inquiry.
- **Social Sciences**—two approved courses in the social sciences that employ critical thinking, quantitative reasoning, or scientific reasoning.

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**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.
- **Oral communication**—one approved course in oral communication.
- **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 (http://bulletin.gwu.edu/arts-sciences/#majorstext) page in this Bulletin.

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### 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.