BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY

The bachelor of arts with a major in applied science and technology is a broad-based, engineering-oriented degree program that includes significant exposure to the liberal arts. It is designed for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media.

The program can be enhanced with a second major in the Columbian College of Arts and Sciences (http://bulletin.gwu.edu/arts-sciences), Elliott School of International Affairs (http://bulletin.gwu.edu/international-affairs), or GW School of Business (http://bulletin.gwu.edu/business). The Department of Engineering Management and Systems Engineering does not offer a second major in applied science and technology.

Bachelor of Arts with a Second Major in Applied Science and Technology

The Department of Engineering Management and Systems Engineering does not offer a second major in applied science and technology.

Visit the program website (http://www.emse.seas.gwu.edu/bachelor-arts-applied-science-technology) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

A total of 128 credits taken as outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. All technical courses taken during the fifth through eighth semesters as outlined by the four-year curriculum sheet respective to each major and approved by the student’s faculty advisor are counted towards the student’s technical GPA.

Plan of Study

The plan of study lists in sequence all course requirements for the degree. Students should review this information carefully and speak to their advisor before changing the sequence of any of these courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>First semester</td>
<td></td>
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</tr>
<tr>
<td>CHEM 1111</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>EMSE 1001</td>
<td>Introduction to Systems Engineering</td>
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<tr>
<td>SEAS 1001</td>
<td>Engineering Orientation</td>
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</tbody>
</table>

MATH 1231  Single-Variable Calculus I

UW 1020  University Writing

Humanities or social sciences elective

Second semester

CHEM 1112  General Chemistry II

CSCI 1121  Introduction to C Programming

or CSCI 1111  Introduction to Software Development

MATH 1232  Single-Variable Calculus II

Humanities or social sciences elective

Arts elective

Third semester

CSCI 1132  Data Structures and Software Design

or CSCI 1112  Algorithms and Data Structures

PHYS 1011  General Physics I

or PHYS 1021  University Physics I

Literature elective

Two unrestricted electives

Fourth semester

APSC 3115  Engineering Analysis III

EMSE 4410  Engineering Economic Analysis

PHYS 1012  General Physics II

or PHYS 1022  University Physics II

Literature elective

Unrestricted elective

Fifth semester

BISC 1115 & BISC 1125  Introductory Biology: Cells and Molecules and Introduction to Cells and Molecules Laboratory

EMSE 3850  Quantitative Models in Systems Engineering

COMM 1040  Public Communication

or COMM 1041  Interpersonal Communication

or COMM 1042  Business and Professional Speaking
#### Sixth semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MAE 1004</td>
<td>Engineering Drawing and Computer Graphics</td>
</tr>
<tr>
<td>Allied minor elective</td>
<td>8</td>
</tr>
</tbody>
</table>

**BISC 1116 & BISC 1126**  
Introductory Biology: The Biology of Organisms and Introduction to Organisms Laboratory

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ISTM 4121</td>
<td>Database Principles and Applications</td>
</tr>
<tr>
<td>Humanities or social sciences elective</td>
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</tbody>
</table>

Two allied minor electives | 8 |

#### Seventh semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MAE 3192</td>
<td>Manufacturing Processes and Systems</td>
</tr>
<tr>
<td>EMSE 3740W</td>
<td>Systems Thinking and Policy Modeling</td>
</tr>
<tr>
<td>EMSE 6005</td>
<td>Organizational Behavior for the Engineering Manager</td>
</tr>
<tr>
<td>Allied minor elective</td>
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</table>

**SEAS elective** | 9 |

#### Eighth semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CE 4330W</td>
<td>Contracts and Specifications</td>
</tr>
<tr>
<td>Allied minor elective</td>
<td>8</td>
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<tbody>
<tr>
<td>Humanities or social sciences elective</td>
<td>3</td>
</tr>
</tbody>
</table>

Three unrestricted electives | 6 |

### Electives

Students choose electives in specified categories from lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credits. Popular selections include biology, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, medical preparation, psychology, statistics, and operations research.

1. Course satisfies the University General Education Requirement (http://bulletin.gwu.edu/university-regulations/general-education) in either mathematics or statistics, natural or physical laboratory sciences, or writing.

2. Writing (10 credits). UW 1020 (a required freshman writing course) and COMM 1040, COMM 1041, or COMM 1042. In addition to UW 1020, the student’s academic program must include two writing-intensive courses to satisfy the GW Writing in the Disciplines (WID) requirement; two such courses are CE 4330W and EMSE 3740W.

3. Humanities (6 credits) and Social Sciences (6 credits). Two two-course sequences selected from the SEAS list of electives in the humanities and social sciences.

4. Creative and performing arts (3 credits). One of the following: ENGL 1210; FA 1014, FA 1017, FA 1021, or FA 1041; MUS 1103, MUS 1104, MUS 1107, MUS 1108, or performance study course; PHIL 3162; TRDA 1015, TRDA 1017, TRDA 1025, TRDA 1150, TRDA 1151, TRDA 1152, TRDA 1153, TRDA 1214, or an advanced performance course. Other choices are possible.

5. Literature (6 credits). One two-course sequence selected from among CHIN 3111 and CHIN 3112; ENGL 1410 and ENGL 1411, ENGL 1510 and ENGL 1511, ENGL 1710 and ENGL 1711, or ENGL 1830 and ENGL 1840; FREN 3210 and FREN 3220; GER 2091 and GER 2092; JAPN 3111 and JAPN 3112; REL 1009 and REL 1010; SLAV 1391 and SLAV 1392; SPAN 3210 and SPAN 3220. Other choices are possible.

6. Unrestricted (or “free”) electives (18 credits). The academic advisor must approve the student’s selection of unrestricted electives. If necessary, unrestricted electives may be used to satisfy prerequisite requirements for the allied minor. Such electives also may be used to convert the allied minor into an official minor or second major. Exercise and sport activities courses may not be used as unrestricted electives.

7. Honors Program students and those who have been invited to join the Scholars in Quantitative and Natural Sciences (SONS) Program take BISC 1120 instead of BISC 1125 for the lab component.

8. Allied minor (15 credits). The student constructs a coherent program with the assistance of the academic advisor. Popular selections include biology, chemistry, business, communication, design, economics, engineering, environmental studies, finance, international business, management, mathematics, media, medical preparation, physics, psychology, public health, statistics, and operations research. The allied minor may be part of a second major in CCAS, ESIA, or SEAS, part of the concentration in general business, or part of an official minor.

9. See the advisor for details.

### Humanities and Social Sciences

4 courses/ 12 credits

All APSC majors must take the following 2 humanities and 2 social science. Social and behavioral sciences courses must be selected from the University General Education Requirement list (http://bulletin.gwu.edu/university-regulations/general-education); At least one Humanities course must be selected from the University General Education Requirement list (http://bulletin.gwu.edu/university-regulations/general-education); the remaining courses must be selected from either the University...
General Education Requirement list or the SEAS General Education Requirement list. (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%20202015%20Admits%201_0.pdf)

(A) Art Elective

1 course/ 3 credits
All Applied Science and Technology majors must choose one of the following: ENGL 1210, FA 1014, FA 1017, FA 1021, or FA 1041; MUS 1103, MUS 1104, MUS 1107, MUS 1108, or performance study course; PHIL 3162; TRDA 1015, TRDA 1017, TRDA 1025, TRDA 1150, TRDA 1151, TRDA 1152, TRDA 1153, TRDA 1214, or an advanced performance course. Additional choices are possible with Faculty Advisor prior approval.

(B) Literature Elective

2 courses/ 6 credits
All Applied Science and Technology majors must choose one two-course sequence selected from among CHIN 3111 and CHIN 3112; ENGL 1410 and ENGL 1411, ENGL 1510 and ENGL 1511, ENGL 1710 and ENGL 1711, or ENGL 1830 and ENGL 1840; FREN 3210 and FREN 3220; GER 2091 and GER 2092; JAPN 3111 and JAPN 3112; REL 1009 and REL 1010; SLAV 1391 and SLAV 1392; SPAN 3210 and SPAN 3220. Additional choices are possible with Faculty Advisor prior approval.