

# BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY (STEM)

Applied science and technology is a multidisciplinary program designed to give a student a broad knowledge base in the sciences and engineering combined with a more in-depth area of focus in another field. This is a broad engineering-oriented degree program, with a breadth of liberal arts, for students who intend to make their careers in fields allied to science, engineering and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media. It is designed to help students pursue their goals in a world that relies more and more upon science and technology.

The program can be enhanced with a second major in either the Columbian College of Arts and Sciences (CCAS) or the Elliott School of International Affairs (ESIA). A second major in SEAS is also possible. A concentration in general business through the GW School of Business is also available.

GW also offers a five-year, two-degree program that combines a bachelor of arts degree in applied science and technology and a master of education in secondary education. The applied science and technology degree requires a strong concentration in chemistry, physics, or mathematics. The degree in secondary education provides eligibility for teacher licensure/certification and is offered through the GW Graduate School of Education and Human Development (GSEHD).

This is a STEM designated program.

Visit the program website (<https://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 toward the student's technical GPA.

### Plan of Study

The plan of study lists in sequence all course requirements for the degree. As part of their plan of study, students complete 15 credits in professional electives, leading to a minor. This minor is a coherent program created by the student and taken as electives in consultation with the advisor. Students should review this information carefully and speak to their advisor before changing the sequence of any of these courses.

Code	Title	Credits
<b>First semester</b>		
CHEM 1111	General Chemistry I <sup>1</sup>	
EMSE 1001	Introduction to Systems Engineering	
SEAS 1001	Engineering Orientation	
MATH 1231	Single-Variable Calculus I <sup>1</sup>	
UW 1020	University Writing <sup>2</sup>	
One humanities, social science, or non-technical elective <sup>3</sup>		
<b>Second semester</b>		
CHEM 1112	General Chemistry II <sup>1</sup>	
CSCI 1121	Introduction to C Programming	
or CSCI 1111	Introduction to Software Development	
MATH 1232	Single-Variable Calculus II <sup>1</sup>	
One arts elective <sup>4</sup>		
One humanities, social science, or non-technical elective <sup>3</sup>		
<b>Third semester</b>		
CSCI 1132	Data Structures and Software Design	
or CSCI 1112	Algorithms and Data Structures	
PHYS 1011	General Physics I <sup>1</sup>	
or PHYS 1021	University Physics I	
One literature elective <sup>5</sup>		
Two unrestricted electives <sup>6</sup>		
<b>Fourth semester</b>		
APSC 3115	Engineering Analysis III	
EMSE 4410	Engineering Economic Analysis	
PHYS 1012	General Physics II <sup>1</sup>	
or PHYS 1022	University Physics II	
One literature elective <sup>5</sup>		
One unrestricted elective <sup>6</sup>		
<b>Fifth semester</b>		
BISC 1111	Introductory Biology: Cells and Molecules	
EMSE 3850	Quantitative Models in Systems Engineering	

COMM 1040	Public Communication <sup>1</sup>
or COMM 1041	Interpersonal Communication
or COMM 1042	Business and Professional Speaking

MAE 1004 Engineering Drawing and Computer Graphics

One professional elective <sup>7</sup>

#### Sixth semester

BISC 1112 Introductory Biology: The Biology of Organisms

ISTM 4121 Database Principles and Applications

One humanities, social science, or non-technical elective <sup>3</sup>

Two professional electives <sup>7</sup>

#### Seventh semester

MAE 3192 Manufacturing Processes and Systems

EMSE 3740W Systems Thinking and Policy Modeling

EMSE 6005 Organizational Behavior for the Engineering Manager

One professional elective <sup>7</sup>

One SEAS elective <sup>8</sup>

#### Eighth semester

CE 4330W Contracts and Specifications

One humanities, social science, or non-technical elective <sup>3</sup>

One professional elective <sup>7</sup>

Three unrestricted electives <sup>6</sup>

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

<sup>2</sup>Writing courses—(10 credits). UW 1020 and COMM 1040, COMM 1041, or COMM 1042. After completing UW 1020 University Writing, students must take two writing-intensive courses to satisfy the GW Writing in the Disciplines (WID) requirement; two such courses are CE 4330W and EMSE 3740W.

<sup>3</sup>Humanities, Social Science, and Non-Technical Elective Requirements—four courses (12 credits). Social and behavioral sciences courses must be selected from the list of University General Education Requirement (<https://bulletin.gwu.edu/university-regulations/general-education/>) courses; At least one humanities course must be selected from the University

General Education Requirement list; the remaining courses must be either additional University General Education courses and/or SEAS Humanities, Social Science, and Non-Technical Elective Requirements (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) courses.

<sup>4</sup>Creative and performing arts elective—One course (3 credits) selected from the following: ENGL 1210; CSA 1101, CSA 1201, CSA 1301, or CSA 1501; CMUS 1104, or performance study course; PHIL 3162; CTAD 1015, CTAD 1025, CTAD 1151, CTAD 1152, CTAD 1153, or an advanced performance course. Other courses can be approved. study course; PHIL 3162; CTAD 1015, CTAD 1025, CTAD 1151, CTAD 1152, CTAD 1153, or an advanced performance course. Other options can be approved in advance by the advisor.

<sup>5</sup>Literature electives—One two-course sequence (6 credits) selected from the following: CHIN 3111 and CHIN 3112; or ENGL 2410 and ENGL 2411; or ENGL 2510 and ENGL 2511; or ENGL 2710 and ENGL 2711; or FREN 3210 and FREN 3220; GER 2091 and GER 2092; or JAPN 3111 and JAPN 3112; or REL 1009 and REL 1010; or SLAV 1391 and SLAV 1392; Other courses can be approved by the advisor.

<sup>5</sup>Literature (6 credits). One two-course sequence selected from the following: CHIN 3111 and CHIN 3112; ENGL 2410 and ENGL 2411, ENGL 2510 and ENGL 2511, ENGL 2710 and ENGL 2711, or ENGL 2830 and ENGL 2840; FREN 3210 and FREN 3220; GER 2091 and GER 2092; JAPN 3111 and JAPN 3112; REL 1009 and REL 1010; and SLAV 1391 and SLAV 1392. Other courses may be approved.

<sup>6</sup>Unrestricted (or “free”) electives (18 credits). Unrestricted electives must be approved by the advisor. Lifestyle, Sport, and Physical Activity (LSPA) courses cannot be used as unrestricted electives.

<sup>7</sup>Professional electives (15 credits). Students constructs take a sequence of courses (professional leading to a minor from another department of the University. Professional electives are selected with the approval of the student’s academic advisor to satisfy the minor requirements. Areas frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, or specific fields of engineering. Consult the advisor for other approved areas and requirements.