**Science, Technology, Engineering, & Math (STEM)**

**The Program**

Designed for students who plan to go on to a four-year school and major in one of the traditional STEM areas (science, technology, engineering, and math) with a heavy emphasis on undergraduate mathematics or science. Students wishing to concentrate in one of these areas should consult with an advisor or ARTSYS as early as possible to ensure that all or most of their course credits will transfer to the four-year institution of their choice.

**Growth Potential & Estimated Salaries**


**Science**

Employment of life, physical, and social science occupations is projected to grow 7 percent from 2014 to 2024, which will result in about 97,600 new jobs. The median annual wage for these occupations was $61,450 in May 2014.**

**Technology**

Employment of computer and information technology occupations is projected to grow 12 percent from 2014 to 2024 adding about 488,500 new jobs. This growth is due in part to a greater emphasis on cloud computing, the collection and storage of big data, more everyday items becoming connected to the Internet, and the continued demand for mobile computing. The median annual wage for computer and information technology occupations was $79,390 in May 2014.**

**Engineering**

Employment of architecture and engineering occupations is projected to grow 3 percent from 2014 to 2024, adding about 67,200 new jobs. The median annual wage for these occupations was $75,780 in May 2014.**

**Mathematics**

Employment of mathematicians is projected to grow 21 percent from 2014 to 2024. Businesses will need mathematicians to analyze the increasing volume of digital and electronic data. The median annual wage for mathematicians was $103,720 in May 2014.**


**STEM Learning Center**

The STEM Learning Center helps students succeed in their science, engineering and math courses. Students can drop-in for tutoring, for a quiet place to study, to ask questions, get help with calculators, or use supplemental resources.

The Center is staffed with faculty and tutors, as well as STEM learning assistants who are experienced FCC Science, Engineering and Math students who can help you with beginning Algebra through Calculus, Statistics, Chemistry, and Physics.

The Center is open 8:30 a.m. to 8:30 p.m., Monday through Thursday during the fall and spring semesters. More information is available on the STEM Learning Center webpage.

**Faculty**

In addition to highly qualified full-time faculty, the program utilizes local business professionals who teach on an adjunct basis in their area of education and expertise.
Transfer Note
The Career & Transfer Center has a variety of print and electronic resources available to help with transfer planning. ARTSYS, a computerized articulation system created especially to help community college students transfer to Maryland four-year institutions is available, as well as College Source and College Board. College Source also allows students to view college catalogs from across the nation.

Financial Assistance
FCC provides a tuition payment plan for students who wish to spread payment over several months. Scholarship and loan assistance is available for eligible students. For complete scholarship information, contact the Financial Aid office.

SCIENCE, TECHNOLOGY, ENGINEERING AND MATH (STEM) A.S. Degree (Transfer)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>English</strong></td>
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<tr>
<td>EN 101 English Composition</td>
<td>3</td>
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<tr>
<td><strong>Mathematics</strong></td>
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<tr>
<td>MA 210 Calculus I</td>
<td>4</td>
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<tr>
<td><strong>Social &amp; Behavioral Sciences</strong></td>
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<tr>
<td>Two courses selected from different disciplines</td>
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<tr>
<td><strong>Arts &amp; Humanities</strong></td>
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<tr>
<td>Arts Elective (GenEd course list)</td>
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<tr>
<td>Humanities Elective (GenEd course list)</td>
<td>3</td>
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<tr>
<td>Communications Elective (GenEd course list)</td>
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<tr>
<td><strong>Biological &amp; Physical Sciences</strong></td>
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<tr>
<td>CH 101 General Chemistry</td>
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<tr>
<td>Biological &amp; Physical Sciences Lab course (GenEd course list)</td>
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<tr>
<td><strong>General Education STEM Elective</strong></td>
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<td><strong>PE/Health Requirement</strong></td>
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<td><strong>Departmental Requirements</strong></td>
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<tr>
<td>STEM Electives (Lab Science/Technology/Engineering/Mathematics)</td>
<td>25</td>
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</tbody>
</table>

For more information on STEM: Marc Frankenberry • 301.846.2606 • mfrankenberry@frederick.edu
The following are STEM Options under the Associate of Science Degree. Students interested in the following majors should consult the online curriculum pathway before selecting elective.

**BIOLOGY**

- BI 101 General Biology
- BI 102 General Biology
- BI 103 Anatomy & Physiology
- BI 104 Anatomy & Physiology
- BI 120 Microbiology for Allied Health
- BI 203 Elements of Microbiology

**CHEMISTRY**

- CH 102 General Chemistry
- CH 105 Essentials of Organic Chemistry
- CH 201 Organic Chemistry
- CH 202 Organic Chemistry

**ENGINEERING**

- EG 100 Introductory Engineering Science
- EG 110 Engineering Statics
- EG 210 Mechanics of Materials
- EG 211 Engineering Dynamics
- EG 214 Engineering Thermodynamics

**MATHEMATICS**

- MA 111 Pre-calculus
- MA 130 College Algebra
- MA 131 Trigonometry with Analytic Geometry
- MA 202 Introduction to Discrete Mathematics
- MA 207 Elementary Statistics with Probability
- MA 211 Calculus II
- MA 212 Calculus III
- MA 213 Differential Equations
- MA 214 Introduction to MatLab
- MA 218 Linear Algebra

**PHYSICS**

- PY 101 Survey of Physics
- PY 201 Fundamentals of Physics
- PY 202 Fundamentals of Physics
- PY 203 Introductory Physics I
- PY 204 Introductory Physics II
- PY 205 Modern Physics

**COMPUTER AND INFORMATION SYSTEMS**

- CIS 101 Information Systems and Technology
- CIS 106 Introduction to Object Design and Programming
- CIS 111L Microcomputer Software Applications: Open Operating Systems
- CIS 111M Personal Computer Operating Systems Concepts
- CIS 140 Introduction to Object-Oriented Programming in Java
- CIS 170 Security Fundamentals
- CIS 179 Cybersecurity Fundamentals
- CIS 180 Networking Fundamentals
- Any 200-level CIS course

**ACADEMIC AND CAREER ENGAGEMENT**

- ACE 100 Learning Strategies

For more information about our graduation rates, the median debt of students who completed the program, and other important information, please visit our website at www.frederick.edu/gainfulemployment.

Frederick Community College prohibits discrimination against any person on the basis of age, ancestry, citizenship status, color, creed, ethnicity, gender identity and expression, genetic information, marital status, mental or physical disability, national origin, race, religious affiliation, sex, sexual orientation, or veteran status in its activities, admissions, educational programs, and employment. Frederick Community College makes every effort to accommodate individuals with disabilities. If you have accommodation needs, please call 301.846.2408. To request a sign language interpreter, please call 240.629.7939 or 301.846.2408 (Voice) or email Interpreting@frederick.edu. Requests for any accommodation should be made at least five working days prior to attending a scheduled event.