

# COMPUTER SCIENCE A.S. (TRANSFER)

Program website ([https://www.frederick.edu/programs/information-technology/computer-science-\(1\).aspx](https://www.frederick.edu/programs/information-technology/computer-science-(1).aspx))

## Program Description

Provides a core of courses which enables the student to transfer to a four-year college and major in computer science. Includes courses in mathematics and computer science comparable to those offered in the first two years of a four-year college's computer science major.

Trains students in the fundamentals of programming as practiced by professionals, emphasizing skills that are basic and enduring, so as to prepare them for transfer to a four-year school and/or a career in industry.

## Program Learning Outcomes

- Develop computer software (including creating, augmenting, debugging, and testing).
- Demonstrate mathematical and reasoning skills needed for computer science.
- Design and implement programming projects similar to those seen in the real world.
- Demonstrate proficient communication (individual and group) and collaborative work, in the context of programming projects.

**Please note: the Computer Science A.S. requirements include substantial modifications that are pending MHEC approval.**

## Program Requirements

- Students must complete their credit **English and Mathematics** within the first 24 credits.
- One course must meet the cultural competence graduation requirement (<https://frederick-public.courseleaf.com/general-education-core/#cultural>).
- **CORE: The General Education CORE** is that foundation of the higher education curriculum providing a coherent intellectual experience for all students. Students should check with an advisor or the transfer institution (ARTSYS) before selecting General Education CORE requirements. <http://artsys.usmd.edu/>
- In some General Education categories (Mathematics, Biological & Physical Sciences), a 4-credit course selected from the GenEd course list will satisfy the requirement in place of a 3-credit course. Students should check with an advisor before selecting these courses.
- For the Physical Education, Health, or Nutrition requirement, a 3-credit PHED, HLTH, or NUTR course may satisfy the requirement in place of a 1-credit course. Students should check with an advisor before selecting this course.
- Students must earn a grade of "C" or better in ENGL 101 English Composition.

Code	Title	Credits
<b>English</b>		
ENGL 101	English Composition	3
<b>Mathematics</b>		
MATH 185	Calculus I <sup>1</sup>	4
<b>Social &amp; Behavioral Sciences</b>		

Social & Behavioral Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#social-behavioral">https://frederick-public.courseleaf.com/general-education-core/#social-behavioral</a> ) <sup>2</sup>		3
Social & Behavioral Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#social-behavioral">https://frederick-public.courseleaf.com/general-education-core/#social-behavioral</a> ) <sup>2</sup>		3
<b>Arts &amp; Humanities</b>		
Arts Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#arts">https://frederick-public.courseleaf.com/general-education-core/#arts</a> )		3
Humanities Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#humanities">https://frederick-public.courseleaf.com/general-education-core/#humanities</a> )		3
Communication Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#communication">https://frederick-public.courseleaf.com/general-education-core/#communication</a> )		3
<b>Biological &amp; Physical Sciences</b>		
Biological & Physical Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#biological-physical">https://frederick-public.courseleaf.com/general-education-core/#biological-physical</a> ) (Lab course)		4
Biological & Physical Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#biological-physical">https://frederick-public.courseleaf.com/general-education-core/#biological-physical</a> )		3
<b>General Education Required Elective</b>		
MATH 195	Calculus II	4
<b>Physical Education, Health, or Nutrition Requirement</b>		
Select one PHED, HLTH, or NUTR course		1
<b>Departmental Requirements</b>		
CMSC 130	Programming Fundamentals	4
CMSC 131	Programming Methods and Object Design	4
CMSC 230	Data Structures and Algorithms	4
CMSC 285	Programming Capstone Project	4
<b>Electives</b>		
Select 10 credits from the following areas: CMIS, CMSC, MATH <sup>3</sup>		10
Total Credits		60

1

To enroll in MATH 185, students must have received a grade of C or better in MATH 145 (or achieved the appropriate score on the placement test), and must have received a grade of C or better in MATH 165.

2

Social & Behavioral Science electives must be from two different disciplines.

3

If a student does not place into MATH 185, the appropriate prerequisite courses (MATH 145 and MATH 165) should be taken here.

If a student does place into MATH 185, other courses should be taken instead.

## Transfer Note

For more information on careers and transfer, contact the Career and Academic Planning Services office at 301.846.2471 or visit Transfer Services (<https://www.frederick.edu/student-resources/counseling-advising/transfer-services.aspx>).

## Guided Pathway to Success (GPS)

Suggested schedules map your path to degree completion.

Students should meet with an advisor each semester to carefully select and sequence courses based on their specific academic goals and interests. Visit Jefferson Hall or call 301.846.2471 for advising.

Recommended First Semester		Credits
ENGL 101	English Composition <sup>1</sup>	3
MATH 185	Calculus I <sup>1,2</sup>	4
CMSC 130	Programming Fundamentals (Milestone)	4
Social & Behavioral Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#social-behavioral">https://frederick-public.courseleaf.com/general-education-core/#social-behavioral</a> )		3
Credits		14

**Recommended Second Semester**

MATH 195	Calculus II	4
CMSC 131	Programming Methods and Object Design (Milestone)	4
Humanities Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#humanities">https://frederick-public.courseleaf.com/general-education-core/#humanities</a> )		3
Biological & Physical Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#biological-physical">https://frederick-public.courseleaf.com/general-education-core/#biological-physical</a> ) w/lab		4
Credits		15

**Recommended Third Semester**

CMIS, CMSC, or MATH Elective <sup>3</sup>		4
CMSC 230	Data Structures and Algorithms (Milestone)	4
Communication Elective (Ge Ed course list)		3
Physical Education, Health, or Nutrition Requirement		1,3
Arts Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#arts">https://frederick-public.courseleaf.com/general-education-core/#arts</a> )		3
Credits		15-17

**Recommended Fourth Semester**

CMSC 285	Programming Capstone Project	4
CMIS, CMSC, or MATH Elective <sup>3</sup>		3-4
CMIS, CMSC, or MATH Elective <sup>3</sup>		3-4
Biological & Physical Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#biological-physical">https://frederick-public.courseleaf.com/general-education-core/#biological-physical</a> )		3-4
Social & Behavioral Sciences Elective (Gen Ed course list) ( <a href="https://frederick-public.courseleaf.com/general-education-core/#social-behavioral">https://frederick-public.courseleaf.com/general-education-core/#social-behavioral</a> ) (in a different discipline from first)		3
Credits		16-19
Total Credits		60-65

**1**

Take this course within the first 24 credits.

**2**

Prerequisite: MATH 165 Precalculus

**3**

If a student does not place into MATH 185, the appropriate prerequisite courses (MATH 145 and MATH 165) should be taken prior to MATH 185 and MATH 195, and can be used to toward fulfilling the CMIS, CMSC, or MATH electives requirement.

If a student does place into MATH 185, other CMIS, CMSC, or MATH courses should be taken to fulfill the electives instead.

**Part-time Students**

Part-time students should complete courses in the order listed on the pathway. Please contact program manager for questions about part-time status.

Students who take fewer than 15 credits each semester or who require developmental English or Math coursework will need additional semesters to complete their degrees. Summer term and January session classes may help students to make faster progress.

**Pathway Legend**

Milestone - courses with the Milestone notation should be taken within the recommend credit range to stay on track for program completion.

Fall, Spring, Summer - courses with a Fall, Spring, or Summer notation indicate the course is offered in the specified semester only.