

SOFTWARE ENGINEERING AREA OF CONCENTRATION WITHIN STEM TECHNOLOGY A.A.S. (CAREER)

Program website ([https://www.frederick.edu/programs/information-technology/information-technology-\(2\).aspx](https://www.frederick.edu/programs/information-technology/information-technology-(2).aspx))

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Program Description

Trains graduates with the necessary software development skills to plan, analyze, design, validate, implement, deploy, and manage software systems. This program covers system development life cycle, object oriented programming, mobile app development, C++, C#, Java, Python, R, SAS, and database management systems. The program is designed to prepare graduates with a career as a programmer, software architect, software developer, software engineer, or systems analyst.

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.
- Students must complete a minimum of nine credits at the 200-level.

Code	Title	Credits
English		
ENGL 101	English Composition	3
Mathematics		
Mathematics Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#mathematics) - Recommended course(s) below:		
MATH 120	Statistics	
Social & Behavioral Sciences		
Social & Behavioral Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#social-behavioral)		
		3
Arts & Humanities		

Arts Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#arts)		3
Humanities Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#humanities)		3
Communication Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#communication)		3
Biological & Physical Sciences		
Biological & Physical Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#biological-physical)		3
Physical Education, Health, or Nutrition Requirement		
Select one PHED, HLTH, or NUTR course		1
Concentration Courses		
CMIS 106	Object Design and Programming	3
CMIS 119	Statistical Analysis System (SAS)	3
CMIS 201	Computer Science I	4
CMIS 203	Systems Analysis & Design	3
CMIS 208	C++ Programming	3
CMIS 225C	Computer Programming Language: Mobile Applet Programming	3
CMIS 226	Game Scripting	3
CMIS 227	Game Programming	4
CMIS 230	Database Management Systems	3
CMIS 256	Statistical Computing	3
Electives		
Select six credits of the following:		6
Any CMIS or BMGT or MATH courses		
Total Credits		60

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 ¹	3
Mathematics Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#mathematics) - Recommended course(s) below: ¹		3
MATH 120	Statistics	
CMIS 106	Object Design and Programming	3
CMIS 119	Statistical Analysis System (SAS)	3
Any CMIS or BMGT or MATH course		3
Credits		15
Recommended Second Semester		Credits
Arts Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#arts)		3
Humanities Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#humanities)		3
CMIS 226	Game Scripting	3
CMIS 201	Computer Science I	4
CMIS 208	C++ Programming	3
Credits		16
Recommended Third Semester		Credits
Biological & Physical Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#biological-physical)		3-4

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Social & Behavioral Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#social-behavioral)	3
CMIS 203 Systems Analysis & Design	3
CMIS 256 Statistical Computing	3
CMIS 230 Database Management Systems	3
Credits	15-16
Recommended Fourth Semester	
Communication Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#communication)	3
Physical Education, Health, or Nutrition Requirement	1,3
CMIS 225C Computer Programming Language: Mobile Applet Programming	3
CMIS 227 Game Programming	4
Any CMIS or BMGT or MATH course	3
Credits	14-16
Total Credits	60-63

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Take this course within the first 24 credits.

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.