COMPUTER SCIENCE (AS)

Award: Associate of Science Degree No. of credits required: 60 For more information: Contact Assistant Professor Jerome Brown. 443-412-2125, jebrown@harford.edu; or Admissions, 443-412-2109.

Program Description

Computer Science is the study of the design, theory and programming of the computer system. The Computer Science program gives students an understanding of the problem-solving techniques used to program the computer as well as an understanding of the principles that govern the conceptual organization of the computer system and its processes. The program emphasizes the mathematical and scientific components of programming.

Program Goals

Students who successfully complete the Computer Science Program will:

- 1. Develop skills and expand their knowledge in computer science through research and self-directed study and communicate their knowledge in speaking and writing.
- 2. Apply the defining processes of computer science theory, abstraction, and design - to solve a wide variety of problems.
- 3. Solve cross discipline problems through the integration of mathematics, traditional sciences and computer science principles.
- 4. Analyze and evaluate traditional algorithms used for data reorganization and manipulation.
- 5. Possess the necessary skills for transfer to an accredited four year institution.

Transfer Information

This program provides the first two years of a bachelor's degree in Computer Science. Students who plan to transfer to a four-year college or university should review the requirements of that institution. If they are significantly different than the requirements of the AS in Computer Science, the student should consult with an academic advisor.

Employment Information

Computer Science is a field with a projected growth rate of 23% from 2022 to 2023, with an estimate of 9400 new jobs. Computer scientists secure careers that explore problems in computing and develop theories and models to address those problems. They also collaborate with scientists and engineers to solve complex computing problems, determine computing needs and system requirements, develop new computing languages, software systems, and other tools to improve how people work with computers.

Degree Requirements

Recommended Course Sequence

First Semester		Credits
ENG 101	English Composition (GE)	3
MATH 203	Calculus I (GM)	4
CSI 130	Introduction to Concepts in Computer Science	3

	Total Credits	60
	Credits	17
Behavioral/Social catalog.harford.eo science) ¹	Science Elective (GB) (https:// du/general-education/#behavioral-social-	3
Arts/Humanities E general-education	Elective (GAH) (https://catalog.harford.edu/ n/#arts-humanities) ¹	3
MATH 210	Discrete Structures	3
CIS 214	Programming II: Java	4
CSI 132	Computer Science II	4
Fourth Semester		
	Credits	15
Biological/Physica catalog.harford.ed laboratory-science	al Lab Science Elective (GL) (https:// du/general-education/#biological-physical- e) ¹	4
General Elective ¹		3
CIS 221	Programming II: C/C++	4
CIS 201	Assembly Programming Language	4
Third Semester		
	Credits	12
general-education	n/#arts-humanities) ' In Elective	1
Arts/Humanities	Elective (GAH) (https://catalog.harford.edu/	3
MATH 204	Calculus II (GM)	4
CSI 131	Computer Science I	4
Second Semester	Creaits	16
Biological/Physica catalog.harford.eo	al Science Elective (GS) (https:// du/general-education/#science) ¹	3
Behavioral/Social catalog.harford.eo science) ¹	Science Elective (GB) (https:// du/general-education/#behavioral-social-	3
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Electives should be chosen based upon the requirements of the institution to which transfer is planned.

General Education Degree Requirements

Note: The following codes identify courses which satisfy the General Education Degree Requirements:

Behavioral/Social Science (GB) English Composition (GE) Arts/Humanities (GAH) Interdisciplinary and Emerging Issues (GI) Biological/Physical Laboratory Science (GL) Mathematics (GM) Biological/Physical Science (GS)

Part-Time Progression Plan

The part-time progression plan for programs of study has been developed as a helpful example for students to guide their academic journey. This plan outlines a likely sequence of courses and milestones over three years to help students visualize their academic path. It is important to note that this progression plan is based solely on the core requirements outlined in the approved program of study and does not include any additional requirements. Each student's experience may vary based

on their specific interests, course availability, and academic history. Therefore, students are encouraged to work closely with their academic advisor.

General Education Degree Requirements

Note: The following codes identify courses which satisfy the General Education Degree Requirements:

Behavioral/Social Science (GB) English Composition (GE) Arts/Humanities (GAH) Interdisciplinary and Emerging Issues (GI) Biological/Physical Laboratory Science (GL) Mathematics (GM) Biological/Physical Science (GS)

Part-Time General Education Electives

To earn an Associate degree, students must complete at least 60 collegelevel credits, including a required number of General Education (Gen Ed) credits:

- AA, AS, and AAT degrees require 28–36 General Education credits as part of the 60 total. This includes a minimum of:
 - 6 credits of Arts/Humanities (GAH)
 - 6 credits of Behavioral/Social Sciences (GB)
 - 3 credits of English Composition (GE) satisfied by ENG 101 English Composition (GE)
 - · 4 credits of Biological/Physical Laboratory Science (GL)
 - · 3 credits of Mathematics (GM)
 - 3 credits of Biological/Physical Science (GS)
- AAS degrees require at least 18 General Education credits, including one course from each of the following categories: GAH, GB, GE, GL, and GM.

General Education courses must be selected from the college's approved list and may be further specified by individual degree programs. Unless a General Education course is specifically required by a program, the elective General Education courses listed in the recommended sequence are intended as suggestions, not mandatory selections.

Recommended Part-Time Sequence

This course sequence is intended for students who are calculus-ready. Students who are not yet calculus-ready should consult with an academic advisor to determine the appropriate starting point and develop a suitable course plan.

Course	Title	Credits
First Year Fall		
MATH 203	Calculus I (GM)	4
CSI 130	Introduction to Concepts in Computer Science	3
ENG 101	English Composition (GE)	3
	Credits	10
Spring		
CSI 131	Computer Science I	4
MATH 204	Calculus II (GM)	4
	Credits	8

Summer

Select an Arts/Huma	nities Elective (GAH):	3
PHIL 205	Ethics (GAH)	
Arts/Humanities E general-education,	lective (GAH) (https://catalog.harford.edu/ /#arts-humanities)	
	Credits	3
Second Year		
Fall		
CIS 221	Programming II: C/C++	4
CSI 132	Computer Science II	4
	Credits	8
Spring		
CIS 201	Assembly Programming Language	4
Select a Behavioral/S	Social Science Elective (GB):	3
ECON 101	Macroeconomics (GB)	
Behavioral/Social	Science Elective (GB) (https://	
catalog.harford.ed	u/general-education/#behavioral-social-	
science)		
Physical Education E	lective	1
	Credits	8
Summer		
CMST 210	Group Communication and Leadership (GAH)	3
	Credits	3
Third Year		
Fall		
CIS 214	Programming II: Java	4
Select a Behavioral/S	Social Science Elective (GB):	3
HIST 101	History of Western Civilization I (GB)	
Behavioral/Social catalog.harford.ed science)	Science Elective (GB) (https:// lu/general-education/#behavioral-social-	
General Elective ¹		3
	Credits	10
Spring		
Select a Biological/Pl	hysical Lab Science Elective (GL):	4
ES 105 & ES 106	Earth Science (GS) and Earth Science Laboratory (GL)	
Biological/Physica	al Lab Science (GL)	
MATH 210	Discrete Structures	3
	Credits	7
Summer		
Select a Biological/Pl	hysical Science Elective (GS):	3
ASTR 151	Introduction to Astronomy (GS)	
Biological/Physica	Biological/Physical Science Elective (GS) (https://	
catalog.harford.ed	u/general-education/#science)	
	Credits	3
	Total Credits	60

¹ Electives should be chosen based upon the requirements of the institution to which transfer is planned.