DATA SCIENCE (AS)

Award: Associate of Science Degree No. of credits required: 60 For more information: Contact Professor Chris Jones, cjones@harford.edu; stem@harford.edu; or Admissions, 443-412-2109.

Program Description

This program provides students with a background in computer science, mathematics, and information systems necessary for a further study of data science at the Bachelor's degree level. Data Scientists utilize computer programming and scripting, database management, data analysis, statistical interpretation, data preparation and cleaning, and quantitative analysis to solve problems as a business or data mining analyst, data or machine learning engineer, and managers in the field of data science.

Program Goals

- 1. Perform problem solving and computational tasks in the discipline of data science.
- 2. Create computer code and scripts to collect, prepare, and organize data.
- 3. Apply and critically evaluate data analysis techniques.
- 4. Interpret and communicate findings in multiple forms.
- 5. Assess the ethical implications to societies of data-based research and analysis.

Transfer Information

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 Data Science, the student should consult with an academic advisor.

Employment Information

Data Science is an interdisciplinary field with increasing employment opportunities in areas such as business, industry, government and marketing. As of January 2025, the Bureau of Labor Statistics projects a 36% growth in employment between 2023 and 2033, with an estimated 73,100 new jobs. Students seeking careers in data science or wish to pursue further study in data science are required to possess a sound background in programming concepts, data analysis and visualization skills, and mathematics. Additionally, there is an immediate need for skilled laborers with the skills offered through this program of study. Students may find employment after completing this program of study or may elect to transfer to pursue a bachelor's or master's degree in data science.

Degree Requirements

Recommended Course Sequence

First Semester		Credits	
ENG 101	English Composition (GE)	3	
DSCI 101	Introduction to Data Science	3	
CIS 229	Python Programming Language	4	
MATH 203	Calculus I (GM)	4	

	Total Credits	60
	Credits	15
catalog.harford.edu	ı/general-education/#science)	
Biological/Physical	Science Elective (GS) (https://	3
General Elective ²		3
Program Elective ¹		3
PHIL 205 or PHIL 221	Ethics (GAH) or Business Ethics (GAH)	3
DSCI 201	Data Visualization	3
Fourth Semester		_
	Credits	14
DSCI 103	Database Management and Database Systems	3
Biological/Physical catalog.harford.edu laboratory-science)	Lab Science Elective (GL) (https:// ı/general-education/#biological-physical-	4
or ECON 102	or Microeconomics (GB)	Ū
FCON 101	Macroeconomics (GB)	3
CSI 131	Computer Science I	1
Third Somoster	Creats	14
Physical Education	Credite	14
general-education/a	#arts-humanities)	1
Arts/Humanities Ele	ective (GAH) (https://catalog.harford.edu/	3
Program Elective ¹		6
Second Semester DSCI 102	Introductory Statistics with Programming Applications (GM)	4
	Credits	17
catalog.harford.edu science)	ı/general-education/#behavioral-social-	
Dellavioral/Social S	cience Elective (GB) (https://	3

¹ Students may choose a 4-credit program elective.

² Students may choose any transferrable course to satisfy the general elective course requirement.

Program Electives (choose to complete 60 credits)

Code	Title	Credits
CSI 132	Computer Science II	4
ECON 101	Macroeconomics (GB)	3
ECON 102	Microeconomics (GB)	3
MATH 204	Calculus II (GM)	4
MATH 206	Calculus III	4
MATH 210	Discrete Structures	3
MATH 217	Linear Algebra	4

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 First Year	Title	Credits
Fall		
DSCI 101	Introduction to Data Science	3
DSCI 103	Database Management and Database Systems	3
CIS 229	Python Programming Language	4
	Credits	10
Spring		
DSCI 102	Introductory Statistics with Programming Applications (GM)	4
DSCI 201	Data Visualization	3
	Credits	7
Summer		
PHIL 205	Ethics (GAH)	3
	Credits	3
Second Year		
Fall		
ENG 101	English Composition (GE)	3
MATH 203	Calculus I (GM)	4
Physical Education El	ective	1
,	Credits	8
Spring		· ·
CSI 131	Computer Science I	4
FCON 101	Macroeconomics (GB)	3
	Credits	7
Summer	orcano	
Select an Arts/Human	nities Elective (GAH):	з
HIST 101	History of Western Civilization L(GB)	0
Arts/Humanities F	lective (GAH) (https://catalog.harford.edu/	
general-education/	(#arts-humanities)	
	Credits	3
Third Year Fall		
Program Electives (p.	3) 1	3
General Electives ²		3
Select a Behavioral/S	ocial Science Elective (GB):	3
ECON 102	Microeconomics (GB)	
Behavioral/Social S	Science Elective (GB) (https://	
catalog.harford.ed	u/general-education/#behavioral-social-	
science)		
	Credits	9
Spring	1	
Program Electives (p.	3)	6
Select a Biological/Ph	nysical Lab Science Elective (GL):	4
ES 105 & ES 106	Earth Science (GS) and Earth Science Laboratory (GL)	
Biological/Physica	Lab Science Elective (GL) (https://	
catalog.harford.ed	u/general-education/#biological-physical-	
laboratory-science		
	Credits	10
Summer		
Select a Biological/Ph	nysical Science Elective:	3

ASTR 151	Introduction to Astronomy (GS)	
Biological/Phy catalog.harfor		
	Credits	3
	Total Credits	60

Students may choose a 4-credit program elective.
Students may choose any transferrable course to satisfy the general elective course requirement.

Program Electives

Choose to complete 60 credits

Code	Title	Credits
CSI 132	Computer Science II	4
ECON 101	Macroeconomics (GB)	3
ECON 102	Microeconomics (GB)	3
MATH 204	Calculus II (GM)	4
MATH 206	Calculus III	4
MATH 210	Discrete Structures	3
MATH 217	Linear Algebra	4