COMPUTER AND INFORMATION SCIENCE/DATA SCIENCE

Students with an interest in both areas can pursue a dual BS program in Computer and Information Science and Data Science and thus can earn two BS degrees at the same time:

- BS degree in Computer and Information Science (Computer Science Concentration)
- BS degree in Data Science

The dual degree program requires specified coursework that equals a minimum of 139 total credits.

Dearborn Discovery Core (General Education)

All students must satisfy the University's Dearborn Discovery Core requirements (https://catalog.umd.umich.edu/undergraduate/gen_ed_ddc/), in addition to the requirements for the major

Major Requirements

In addition to completion of the Dearborn Discovery Core, the following courses are required to earn a dual BS degree in Computer and Information Science and Data Science.

Prerequiste Courses

Code	Title	Credit Hours
COMP 105	Writing & Rhetoric I	3
COMP 270	Tech Writing for Engineers (Fulfills 3 credits of DDC Written and Oral Communication)	3
ECON 201	Prin: Macroeconomics (Fulfills 3 credits of DDC Social and Behavioral Analysis)	3
or ECON 202	Prin: Microeconomics	
Select a laboratory science sequence from the following:		8
BIOL 130 & BIOL 320	Intro Org and Environ Biology and Field Biology (IF BIOL 130 & 320 is selected, you must select CHEM 134 as your additional science course.)	
CHEM 134 & CHEM 136	General Chemistry IA and General Chemistry IIA	
GEOL 118 & GEOL 218	Physical Geology and Historical Geology	
PHYS 125 & 125L & PHYS 126 & PHYS 126L	Introductory Physics I and Introductory Physics I Lab/Dis and Introductory Physics II and Intro Physics II Lab/Dis [1]	
PHYS 150 & 150L & PHYS 151 & PHYS 151L	General Physics I and General Physics I Lab/Dis and General Physics II and General Physics II Lab/Dis [1]	
MATH 115	Calculus I	4
MATH 116	Calculus II	4
MATH 215	Calculus III	4
MATH 227	Introduction to Linear Algebra	3
IMSE 317	Eng Probability and Statistics	3
Select one of the following two Groups of courses and take all course from that group:		
Group 1:		11
CIS 1501	CS I for Data Scientists	
CIS 2001	CS II for Data Scientists	
CIS 296	Java Programming	
or CIS 297	Intro to C Sharp	
Group 2:		11
CIS 150	Computer Science I	
CIS 200	Computer Science II	
CIS 298	Intro to Python	
CIS 275	Discrete Structures I	4

Dual Major in CSDS Core Courses

Code	Title	Credit Hours
CIS 310	Computer Org and Assembly Lang	4
CIS 350	Data Struc and Algorithm Anlys	4
CIS 375	Software Engineering I	4
ECE 3100	Data Science I	4
CIS 3200	Data Science II	4
CIS 422	Massive Data Management	4
CIS 427	Comp Networks and Dis Process	4
CIS 450	Operating Systems	4
HHS 470	Information Science and Ethics	3
STAT 305	Introduction to Data Science for All	3
STAT 430	Applied Regression Analysis	3
CIS 4981	Design Seminar for CIS-DS I	2
CIS 4982	Design Seminar for CIS-DS II	2

Concentration in Computer Science (required)

Code	Title	Credit Hours
Select 4 credits from the following (must be a different subject than the previous laboratory science sequence):		4
ASTR 130 & ASTR 131	Introduction to Astronomy and Introductory Astronomy Lab	
BIOL 130	Intro Org and Environ Biology	
BIOL 320	Field Biology	
CHEM 134	General Chemistry IA [1,2]	
CHEM 136	General Chemistry IIA	
GEOL 118	Physical Geology	
GEOL 218	Historical Geology	
PHYS 125 & 125L	Introductory Physics I and Introductory Physics I Lab/Dis [1]	
PHYS 126 & 126L	Introductory Physics II and Intro Physics II Lab/Dis [1]	
PHYS 150 & 150L	General Physics I and General Physics I Lab/Dis [1]	
PHYS 151 & 151L	General Physics II and General Physics II Lab/Dis [1]	

CIS 306	Discrete Structures II	4
CIS 479	Intro to Artificial Intel	3
ENGR 400	Appl Business Tech for Engr	3
or ENT 400	Entrepreneurial Thinking&Behav	
PHYS 125L	Introductory Physics I Lab/Dis	1
PHYS 126L	Intro Physics II Lab/Dis	1
PHYS 150L	General Physics I Lab/Dis	1
PHYS 151L	General Physics II Lab/Dis	1

Data Science Applications Electives

Code	Title	Credit Hours
Select 18 credits from the following:		18
CCM 404	Dynamical Systems	3
CCM 472	Introduction to Computational Mathematics	3
CCM 473	Matrix Computation	3
CIS 376	Software Engineering II	4
CIS 405	Algorithm Analysis & Design	3
CIS 411	Introduction to Natural Language Processing	3
CIS 412	Introduction to Quantum Computing	3
CIS 439	Text Mining and Information Retrieval	3
CIS 446	Wireless & Mobi Comp Security	3
CIS 449	Intro to Software Security	3
CIS 451	Computer Graphics and Visual Computing	3
CIS 452	Information Visualization with Parallel Computing	3
CIS 481	Computational Learning	3
CIS 482	Trustworthy Artificial Intelligence	3
CIS 483	Deep Learning	3
CIS 4851	Data Security and Privacy	3
CIS 489	Edge Computing	3

[1] Credit for only one of the following two courses: PHYS 125 and PHYS 150, and PHYS 126 and PHYS 151

[2] If BIOL 130 and BIOL 320 are selected for the two course science sequence, CHEM 134 must be selected as the additional science course.