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

Please see the Dearborn Discovery Core (General Education) (https://umdearborn.edu/dearborn-discovery-core/) webpage or additional information.

Foundational Studies

Writing and Communication (GEWO) – 6 Credits

Upper-Level Writing Intensive (GEWI) – 3 Credits

Quantitative Thinking and Problem Solving (GEQT) – 3 Credits

Critical and Creative Thinking (GECC) – 3 Credits

Areas of Inquiry

Natural Science (GENS) – 7 Credits

- Lecture/Lab Science Course
- Additional Science Course

Social and Behavioral Analysis (GESB) – 9 Credits

Humanities and the Arts (GEHA) – 6 Credits

Intersections (GEIN) – 6 Credits

Capstone

Capstone (GECE) – 3 Credits

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	

Code	Title	Credit Hours
Select a two course 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 & PHYS 126	Introductory Physics I and Introductory Physics II [1]	
PHYS 150 & PHYS 151	General Physics I and General Physics II [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	0,2
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 two course science sequence):		4

Code	Title	Credit Hours
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	Introductory Physics I [1]	
PHYS 126	Introductory Physics II [1]	
PHYS 150	General Physics I [1]	
PHYS 151	General Physics II [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	

Data Science Applications Electives

Code	Title	Credit Hours
Select 18 credits from the following:		18
CCM 404	Dynamical Systems	3
CCM 472	Introduction to Numerical Analysis	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 423	Dec Support and Exp Systems	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	3
CIS 452	Information Visualization and Virtualization	3
CIS 481	Computational Learning	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.