

Honors College Concentration in Data Analytics (43 –44 credits)

(HC Advisory board: Chaves-Fonnegra, Fily, Hoim, Lanning, McGovern, Ruest)

Data science is a broad, interdisciplinary field, and data scientists may have particular expertise in *statistics*, in *programming*, or in understanding of problems and data structures in particular areas of study. We suggest that students concentrating in Data Science at the WHC should manifest *proficiency* in all three areas, together with *fluency or leadership* in at least one of these.

Data Analytics is part of Data Science. In the Data Analytics concentration, students will be expected to attain fluency in computational skill, and proficiency in both statistical knowledge, and domain expertise. This track was developed in collaboration with faculty from the College of Engineering and Computer Science (COECS).

Courses indicated with a * are taken in the COECS and are typically available online.

Data literacy and quantitative reasoning (6 credits)

Course	Title	Prerequisites	Credit
STA 2023	Honors Introduction to Statistics		3 credits
COP 3073	Honors Introduction to Data Science	STA 2023	3 credits

Mathematical foundations (7 credits)

MAC 2311	Honors Calculus with Analytic Geometry I	MAC 1147/ placement	4 credits
MAD 2104	Honors Discrete Mathematics	MAC 1105/ permission	3 credits

Recommended: MAC 2312 Honors Calculus w/ Analytic Geometry II (Prerequisite MAC 2311): 4 credits

Foundations of computer programming (9-10 credits)

One of the following:

COP 2000	Honors Foundations of Computer Programming		3 credits
COP 2220	Introduction to Programming in C*		3 credits
IDS 3932	Honors Beginner's Programming for Biologists		3 credits
ART 3657C	Honors Introduction to Programming for Visual Arts		4 credits

Both of the following:

COP 3014	Foundations of Computer Science*	One of the above (COP 2220, COP 2000, IDS 3932- Programming, Art 3657C)	3 credits
COP 3530	Data Structures and Algorithm Analysis*	COP 3014 and MAD 2104	3 credits

Data proficiency (9 credits)

COP 3540	Introduction to Database Structures*	COP 3530	3 credits
CEN 4400	Introduction to Computer Systems Performance Evaluation*	COP 3014	3 credits
CAP 4770	Introduction to Data Mining and Machine Intelligence*	COP 3530	3 credits

Recommended: STA 4821 –Stochastic Models for CS (Prerequisite: MAC 2312 or MAC 2282): 3 credits.
COP 4703 – Applied Database Systems (Prerequisite, COP 3540): 3 credits

Additional classes in intelligent systems (6 credits)

Two of the following

CAP 4613	Introduction to Deep Learning*	See UPC consent	3 credits
CAP 4630	Introduction to Artificial Intelligence*	COP 3530 or OSM 4234	3 credits
CAP 5615	Introduction to Neural Networks*	COP 3530	3 credits

Honors thesis (IDS 4970, taken twice for a total of 6 credits)

Total credits: 43-44 credits