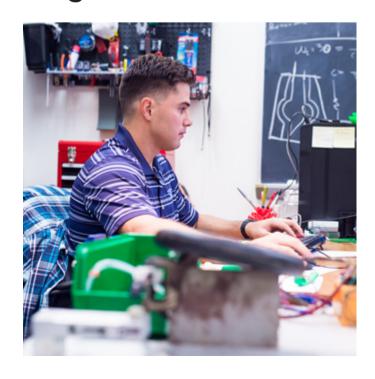
# HARRIET L. WILKES HONORS COLLEGE

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# CONCENTRATION IN DATA ANALYTICS

Students must earn a "C" or better in each course taken to fulfill a concentration requirement.

# **Program Overview**



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. Students concentrating in Data Science at the Wilkes Honors College 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 skills, 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).

## **Advisory Board:**

Dr. Terje Hill | Dr. Kevin Lanning | Dr. Warren McGovern Dr. Andia Chaves-Fonnegra Dr. Yaouen Fily Prof. Annina Ruest

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

#### I. DATA LITERACY AND QUANTITATIVE REASONING (6 CREDITS)

Course	Title	Prerequisites	Credit	
STA 2023	Honors Introduction to Statistics		3	
COP 3076	Honors Introduction to Data Science	STA 2023	3	
Mathematical foundations (7 credits)				
MAC 2311	Honors Calculus with Analytic Geometry I	MAC 1147/ placement	4	
MAD 2104  Recommended:	Honors Discrete Mathematics	MAC 1105/ permission	3	

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

### II. FOUNDATIONS OF COMPUTER PROGRAMMING (9-10 CREDITS)

Course	Title	Prerequisites	Credit
<i>One</i> of the following:			
COP 2000	Honors Foundations of Computer Programming		3
COP 2220	Introduction to Programming in C*		3
IDS 3932	Honors Beginner's Programming for Biologists		3
ART 3657C	Honors Introduction to Programming for Visual Arts		4
<b>Both</b> of the following:			

Course	Title	Prerequisites	Credit
COP 3014	Foundations of Computer Science*	COP 2220, COP 2000, IDS 3932—Programming , OR Art 3657C	3
COP 3530	Data Structures and Algorithm Analysis*	COP 3014 and MAD 2104	3

## III. DATA PROFICIENCY (9 CREDITS)

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

#### 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)**

Course	Title	Prerequisites	Credits
<i>Two</i> of the following			
CAP 4613	Introduction to Deep Learning*		3
CAP 4630	Introduction to Artificial Intelligence*	COP 3530 or OSM 4234	3
CAP 5615	Introduction to Neural Networks*	COP 3530	3

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

Total credits: 43-44 credits



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