FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

UUPC Approval 4/29/24
UFS Approval _____
Banner _____
Catalog _____

Department N/A

College Wilkes Honors College

Program Name

Data Science and Analytics

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)

Spring 2025

Please explain the requested change(s) and offer rationale below or on an attachment.

We are restructuring our current Data Analytics concentration to integrate the modifications implemented by the Department of Electrical Engineering & Computer Science.
Main changes are the following:
- Change the name of the concentration from Data Analytics to Data Science and Analytics
- Introduce the following six subgroups (replacing previous four)
  - A. Data literacy and quantitative reasoning (13 credits)
    STA 2023, COP 3076, MAC 2311, MAD 2104
  - B. Foundations of computer programming (9 credits)
    COP 3035 (or COP 2000), CEN 3062C, COP 3410
  - C. Data Proficiency (6 credits, choose two courses)
    CAP 4613, CAP 4630, CAP 4770, CEN 4400, COP 3274C, COP 3540, COP 3826, COP 4045, COP 4703
  - D. Ethics and Technology Studies (3-4 credits, one course) Add PHI 3653
    ANT4930, ART 4640, PHI 2642, PHI 3633, PHI 3682, PHI 3692, PHI 4930, POS 3626, SYD 4792, SYP4803
  - E. Electives (6-8 credits, choose two courses)
    ART 3657C, ART 4645C, ART 4653C, ART 4658C, BSC 3452C, CHM 3121/L, ECO 4412, EXP 3604, EXP 4631, GIS 3044C, IDS 3930 (or QMB 3302), IDS 3932, ISS 4304, MAC 2313, MAP 2302, MAS 2103, MAT 4930, PHY 4523, PSY 3213/L, STA 3164 (~~or STA ****~~) (or STA 3*** or STA 4***)
  - F. Additional course (3-4 credits)
    Choose one additional course either from group C, D, or E.

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone

Dr. Terje Hill / terjehill@fau.edu

Consult and list departments that may be affected by the change(s) and attach documentation

Dep of Electrical Engineering & Computer Science

Approved by		***Date***
Department Chair	[signature]	4/5/24
College Curriculum Chair	[signature]	4/5/24
College Dean	[signature]	4/9/24
UUPC Chair	Korey Sorge	4/29/24
Undergraduate Studies Dean	Dan Moorhoff	4/29/24
UFS President		
Provost		

Email this form and attachments to mjenning@fau.edu seven business days before the UUPC meeting.

CONCENTRATION IN ~~DATA ANALYTICS~~ DATA SCIENCE AND 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 and Analytics 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 Science and 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. Andia Chaves-Fonnegra | Dr. Yaouen Fily | Dr. Terje Hill | Dr. Kevin Lanning | Dr. Warren McGovern | Prof. Annina Ruest | Dr. Bharat Verma

A. Data literacy and quantitative reasoning (~~6~~ 13 credits)

Course	Title	Prerequisites
STA 2023	Honors Introduction to Statistics	
COP 3076	Honors Introduction to Data Science	STA 2023
MAC 2311	Honors Calculus with Analytic Geometry I	MAC 1147/ placement
MAD 2104	Honors Discrete Mathematics	MAC 1105/ permission

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

B. Foundations of computer programming (9~~-10~~ credits)

Course	Title	Prerequisites
~~COP 2000~~	~~Honors Foundations of Computer Programming~~	
~~COP 2220~~	~~Introduction to Programming in C*~~	
~~IDS 3932~~	~~Honors Beginner's Programming for Biologists~~	
~~ART 3657C~~	~~Honors Introduction to Programming for Visual Arts~~	
~~***Both*** of the following:~~		
~~COP 3014~~	~~Foundations of Computer Science*~~	~~COP 2220, COP 2000, IDS 3932 - Programming , OR Art 3657C~~
~~COP 3530~~	~~Data Structures and Algorithm Analysis*~~	~~COP 3014 and MAD 2104~~
COP 3035 or COP 2000	Introduction to Programming in Python Or Honors Foundations of Programming	
CEN 3062C	Introduction to Software Design	COP 3035
COP 3410	Data Structures and Algorithm Analysis with Python	COP 3035

C. Data proficiency (~~9~~ 6 credits, choose two courses)

Course	Title	Prerequisites
CAP 4613	Introduction to Deep Learning	COP 3410
CAP 4630	Introduction to Artificial Intelligence	COP 3410
CAP 4770	Introduction to Data Mining and Machine Learning	COP 3410, STA 2023
COP 3540	Introduction to Database Structures	COP 3410

Course	Title	Prerequisites
CEN 4400	Introduction to Computer Systems Performance Evaluation	COP 3410, STA 2023
COP 3274C	Systems Programming with C++	COP 3035, CEN 3062
COP 3826	Introduction to Web Programming	COP 3410
COP 4045	Python Programming	COP 3410
COP 4703	Applied Database Systems	COP 3410

~~*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~~	~~C~~
~~***Two*** 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~~

D. Ethics and Technology Studies (3-4 credits, choose one course)

Course	Title	Credits
ANT 4930	Honors Digital Ethnography	3
ART 4640	Honors Game Studies	4
PHI 2642	Honors Ethics of Social Diversity	3
PHI 3633	Honors Biomedical Ethics	3

Course	Title	Credits
PHI 3653	Honors Ethics in Business, Government and Society	3
PHI 3682	Honors Environmental Philosophy	3
PHI 3692	Honors Artificial Intelligence Ethics	3
PHI 4930	Honors Philosophy of Video Games	3
POS 3626	Honors Privacy	3
SYD 4792	Honors Race, Gender, Class, Sexuality and Science	3
SYP 4803	Honors Gender and Technology	3

E. Electives (6-8 credits, choose two courses)

Course	Title	Credits
ART 3657C	Honors Introduction to Programming for Visual Arts	4
ART 4645C	Honors Electronics and Electronic Objects for Art	4
ART 4653C	Honors 3D Computer Game Development	4
ART 4658C	Honors 2D Computer Game Development	4
BSC 3452C	Honors Experimental Design and Data Analysis	3
CHM 3121/L	Honors Quantitative Analysis/Lab	4
ECO 4412	Honors Econometrics: Applied regression Analysis	3
EXP 3604	Honors Cognition	3
EXP 4631	Honors Thinking and Decision Making	3
GIS 3044C	Honors Geographic Information Systems	3
IDS 3930/QMB 3302	Honors Excel/Data Management and Analysis with Excel	3

Course	Title	Credits
IDS 3932	Honors Empirical Analysis of Investments/Financial Markets	3
IDS 3932	Honors Beginner's Programming for Biologists	3
ISS 4304	Honors Computational Social Science	3
MAC 2313	Honors Calculus 3	4
MAP 2302	Honors Differential Equations	3
MAS 2103	Honors Matrix Theory	3
MAT 4930	Honors Introduction to Computational Science	3
PHY 4523	Honors Statistical Physics	3
PSY 3213/L	Honors Research Methods in Psychology/Lab	4
STA 3164	Honors Intermediate Statistics (or any upper-level course with STA prefix	3

F. Additional Course (3-4 credits)

Choose one additional course either from group C, D, or E.

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

Total credits: ~~43-44~~ 46-50 credits

Data Science and Analytics Concentration

46-50 credits

Course#	Course Title	Credits	PreReqs
A. Data literacy and quantitative reasoning (13 credits)			
STA 2023	Honors Introduction to Statistics	3	
COP 3076	Honors Introduction to Data Science	3	STA 2023
MAC 2311	Honors Calculus 1	4	MAC 1147
MAD 2104	Honors Discrete Mathematics	3	
Recommended			
MAC 2312	Honors Calculus 2	4	MAC 2311
B. Foundations of computer programming (9 credits)			
COP 3035*	Introduction to Programming in Python	3	
CEN 3062C	Introduction to Software Design	3	COP 3035
COP 3410	Data Structures and Algorithm Analysis with Python	3	COP 3035
****COP 2000 can be used to substitute for COP 3035***			
COP 2000	Honors Foundations of Programming	3	
C. Data Proficiency (6 credits, choose two courses)			
CAP 4613	Introduction to Deep Learning	3	COP 3410
CAP 4630	Introduction to Artificial Intelligence	3	COP 3410
CAP 4770	Introduction to Data Mining and Machine Learning	3	COP 3410 and STA 2023
CEN 4400	Introduction to Computer Systems Performance Evaluation	3	COP 3410 and STA 2023
COP 3274C	Systems Programming with C++	3	COP 3035 and CEN 3062C
COP 3540	Introduction to Database Structures	3	COP 3410
COP 3826	Introduction to Web Programming	3	COP 3410
COP 4045	Python Programming	3	COP 3410
COP 4703	Applied Database Systems	3	COP 3540
D. Ethics and Technology Studies course (3-4 credits, choose one course)			
ANT 4930	Honors Digital Ethnography	3	
ART 4640	Honors Game Studies	4	
PHI 2642	Honors Ethics of Social Diversity	3	
PHI 3633	Honors Biomedical Ethics	3	
PHI 3653	Honors Ethics in Business, Government and Society	3	
PHI 3682	Honors Environmental Philosophy	3	
PHI 3692	Honors Artificial Intelligence Ethics	3	
PHI 4930	Honors Philosophy of Video Games	3	
POS 3626	Honors Privacy	3	
SYD 4792	Honors Race, Gender, Class, Sexuality and Science	3	
SYP 4803	Honors Gender and Technology	3	
E. Electives (6-8 credits, choose two courses)			
ART 3657C	Honors Introduction to Programming for Visual Arts	4	
ART 4645C	Honors Electronics and Electronic Objects for Art	4	
ART 4653C	Honors 3D Computer Game Development	4	

ART 4658C	Honors 2D Computer Game Development	4	
BSC 3452C	Honors Experimental Design and Data Analysis	3	
CHM 3121/L	Honors Quantitative Analysis/Lab	4	CHM 2045/L, CHM 2046/L
ECO 4412	Honors Econometrics: Applied regression Analysis	3	STA 2023
EXP 3604	Honors Cognition	3	PSY 3213
EXP 4631	Honors Thinking and Decision Making	3	
GIS 3044C	Honors Geographic Information Systems	3	
IDS 3930/QMB 3302	Honors Excel/Data Management and Analysis with Excel	3	
IDS 3932	Honors Empirical Analysis of Investments/Financial Market	3	STA 2023, ECO 2023
IDS 3932	Honors Beginner's Programming for Biologists	3	
ISS 4304	Honors Computational Social Science	3	STA 2023, COP 3076
MAC 2313	Honors Calculus 3	4	MAC 2312
MAP 2302	Honors Differential Equations	3	MAC 2312
MAS 2103	Honors Matrix Theory	3	MAC 2311
MAT 4930	Honors Introduction to Computational Science	3	permission
PHY 4523	Honors Statistical Physics	3	PHY 2049
PSY 3213/L	Honors Research Methods in Psychology/Lab	4	PSY 1012
STA 3164	Honors Intermediate Statistics (or any upper level course w	3	STA 2023
	STA prefix)		
F. Additional course (3-4 credits)			
	Choose one additional course either from group C, D, or E.	3 or 4	
Thesis (6 credits, taken twice)			
IDS 4970	Honors Thesis	3	