DATA SCIENCE, B.S.

Program Learning Outcomes

Graduates of the program will be able to:

- demonstrate facility with analytical and algebraic concepts.
- write proofs.
- apply their mathematical knowledge and critical thinking to solve problems.
- use technology to solve problems.
- speak about their work with precision, clarity, and organization.
- write about their work with precision, clarity, and organization.
- identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand.
- collaborate effectively in teams.
- understand and create arguments supported by quantitative evidence.
- understand the professional, ethical, and social issues and responsibilities with the implementation and use of mathematical models and technology.

Biology Track

Code	Title	Units
Lower-Division Requirements		
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3
CSC 1054 and CSC 1054L	Objects and Elementary Data Structures and Objects and Elementary Data Structures Lab	4
CSC 2052 and CSC 2052L	Data Structures in C++ and Data Structures in C++ Lab	2
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4
MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
MTH 2092	Applied Project for Data Science	2
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
ISS 4014	Data Base Systems and Web Integration	4
MTH 3012	Number Theory with Proofs	2
MTH 3033	Differential Equations	3
MTH 3043	Discrete Mathematics	3
MTH 3073	Mathematical Modeling	3
MTH 3083	Mathematical Probability and Statistics	3
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Computer Science	1
CSC 3011 or CSC 3031	Machine Learning and Multivariate Modeling in R Data Visualization and Communication with R	1
MTH 4024 or MTH 4044	Real Analysis Abstract Algebra	4
MTH 4062 or MTH 4072	Research in Data Science Internship in Data Science	2
Biology Courses		
BIO 2010 and BIO 2010L	Cell Biology and Biochemistry (FE) and Cell Biology and Biochemistry Laboratory (FE)	4
Choose one (1) of the following: [1]		4
BIO 2011 and BIO 2011L	Ecological and Evolutionary Systems (FE) and Ecological and Evolutionary Systems Laboratory (FE)	
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	
Total Units		**65**

[1] Recommended: Take both BIO 2011/BIO 2011L and BIO 3045/BIO 3045L if there is space in your schedule.

Finance Track

Code	Title	Units
Lower-Division Requirements		
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3
CSC 1054 and CSC 1054L	Objects and Elementary Data Structures and Objects and Elementary Data Structures Lab	4
CSC 2052 and CSC 2052L	Data Structures in C++ and Data Structures in C++ Lab	2
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4
MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
MTH 2092	Applied Project for Data Science	2
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
ISS 4014	Data Base Systems and Web Integration	4
MTH 3012	Number Theory with Proofs	2
MTH 3033	Differential Equations	3
MTH 3043	Discrete Mathematics	3
MTH 3073	Mathematical Modeling	3
MTH 3083	Mathematical Probability and Statistics	3
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Computer Science	1
CSC 3011 or CSC 3031	Machine Learning and Multivariate Modeling in R Data Visualization and Communication with R	1
MTH 4024 or MTH 4044	Real Analysis Abstract Algebra	4
MTH 4062 or MTH 4072	Research in Data Science Internship in Data Science	2
Finance Courses		
ACC 2000	Principles of Accounting for Non-Business Majors	3
FIN 3035	Business Finance	3
Choose one (1) course from the following: [1]		3
ECO 1000	Survey of Economics (FE)	
ECO 1001	Principles of Macroeconomics (FE)	

ECO 1002	Principles of Microeconomics (FE)	
Total Units		**66**

[1] If you are planning on becoming an Actuary, the Society of Actuaries requires **both** ECO 1001 and ECO 1002. The Society of Actuaries also requires FIN 3035 and FIN 3085. If you complete these two sequences with a B or better, you will receive credit for two of the 10 requirements for becoming an actuary.

Note(s): An elective course may not count as both an upper-division requirement and a required "additional elective."

Total Non-FE Units for Degree: 59