APPLIED MATHEMATICS, 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.

Emphases

- Biology: Genetics (p. 1)
- Biology: Environmental Science (p. 1)
- Chemistry (p. 1)
- Physics (p. 2)

Biology: Genetics Emphasis

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
MTH 1064 and MTH 1064L	Calculus I (GE) and Calculus I Lab (GE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4
MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
Upper-Division Requirements		
CSC 3003	Python and UNIX	3
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 4013	Complex Analysis	3
MTH 4024	Real Analysis	4
MTH 4044	Abstract Algebra	4
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Mathematics	1
Choose one (1) course from the following: [1]		2
MTH 4072	Internship in Data Science	
MTH 4142	Data Science Project I	
Biology: Genetics Courses		
BIO 2010 and BIO 2010L	Cell Biology and Biochemistry (GE) and Cell Biology and Biochemistry Lab (GE)	4
BIO 3045 and BIO 3045L	Genetics and Genetics Lab	4
Total Units		**64**

Biology: Environmental Science Emphasis

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
MTH 1064 and MTH 1064L	Calculus I (GE) and Calculus I Lab (GE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4
MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
Upper-Division Requirements		
CSC 3003	Python and UNIX	3
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 4013	Complex Analysis	3
MTH 4024	Real Analysis	4
MTH 4044	Abstract Algebra	4
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Mathematics	1
Choose one (1) course from the following: [1]		2
MTH 4072	Internship in Data Science	
MTH 4142	Data Science Project I	
Biology: Environmental Science Courses		
BIO 2011 and BIO 2011L	Ecological and Evolutionary Systems (GE) and Ecological and Evolutionary Systems Lab (GE)	4
BIO 4083	Introduction to Geographic Information Systems (GIS)	3
Total Units		**63**

Chemistry Emphasis

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
MTH 1064 and MTH 1064L	Calculus I (GE) and Calculus I Lab (GE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4

MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
Upper-Division Requirements		
CSC 3003	Python and UNIX	3
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 4013	Complex Analysis	3
MTH 4024	Real Analysis	4
MTH 4044	Abstract Algebra	4
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Mathematics	1
Choose one (1) course from the following: [1]		2
MTH 4072	Internship in Data Science	
MTH 4142	Data Science Project I	
Chemistry Courses		
CHE 1052 and CHE 1052L	General Chemistry I (GE) and General Chemistry I Lab (GE)	5
CHE 1053 and CHE 1053L	General Chemistry II and General Chemistry II Lab	4
CHE 2013	Analytical Chemistry	3
Total Units		**68**

Physics Emphasis

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
MTH 1064 and MTH 1064L	Calculus I (GE) and Calculus I Lab (GE)	4
MTH 1074 and MTH 1074L	Calculus II and Calculus II Lab	4
MTH 2033	Linear Algebra	3
MTH 2074	Calculus III	4
Upper-Division Requirements		
CSC 3003	Python and UNIX	3
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 4013	Complex Analysis	3
MTH 4024	Real Analysis	4
MTH 4044	Abstract Algebra	4
MTH 4053	Advanced Applied Statistics	3
MTH 4081	Senior Seminar in Mathematics	1
Choose one (1) course from the following: [1]		2
MTH 4072	Internship in Data Science	
MTH 4142	Data Science Project I	
Physics Courses		
PHY 2044 and PHY 2044L	University Physics I (GE) and University Physics I Lab (GE)	4
PHY 2054 and PHY 2054L	University Physics II and University Physics II Lab	4
PHY 4013	Thermodynamics	3
Total Units		**67**