COMPUTATIONAL SCIENCE MINOR - BIOLOGY/GENETICS (BIOLOGY)

Core Courses for Biology/Genetics Emphasis

Biology Major

Code	Title	Units
Lower-Division Requirements		
BIO 2010 and BIO 2010L	Cell Biology and Biochemistry (FE) and Cell Biology and Biochemistry Laboratory (FE)	4
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3
Upper-Division Requirements		
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	4
CSC 3002	UNIX and Python Scripting for Computational Science	2
CSC 3011 or CSC 3031	Machine Learning and Multivariate Modeling in R Data Visualization and Communication with R	1
Project		
Choose at least three (3) units from the following:		3
CSC 4133	Service Learning in Computer Science	
HON 4098 and HON 4099	Honors Project I and Honors Project II	
MTH 4133	Service Learning in Mathematics	
Biology Major - Required Courses		
CSC 3022	Data Management for Computational Science	2
MTH 1044	Calculus with Applications (FE)	4
MTH 3063	Calculus Based Statistics with R	3
Total Units		**26**

Computer Science Majors

Code	Title	Units
Lower-Division Requirements		
BIO 2010 and BIO 2010L	Cell Biology and Biochemistry (FE) and Cell Biology and Biochemistry Laboratory (FE)	4
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3
Upper-Division Requirements		
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	4
CSC 3002	UNIX and Python Scripting for Computational Science	2
CSC 3011 or CSC 3031	Machine Learning and Multivariate Modeling in R Data Visualization and Communication with R	1
Project		
Choose at least three (3) units from the following:		3
CSC 4133	Service Learning in Computer Science	
HON 4098 and HON 4099	Honors Project I and Honors Project II	
MTH 4133	Service Learning in Mathematics	
Computer Science Majors - Required Courses		
ISS 4014	Data Base Systems and Web Integration	4
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4
MTH 3083	Mathematical Probability and Statistics	3
Total Units		**28**

Mathematics Majors

Code	Title	Units
Lower-Division Requirements		
BIO 2010 and BIO 2010L	Cell Biology and Biochemistry (FE) and Cell Biology and Biochemistry Laboratory (FE)	4
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3
Upper-Division Requirements		
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	4
CSC 3002	UNIX and Python Scripting for Computational Science	2
CSC 3011 or CSC 3031	Machine Learning and Multivariate Modeling in R Data Visualization and Communication with R	1
Project		
Choose at least three (3) units from the following:		3
CSC 4133	Service Learning in Computer Science	
HON 4098 and HON 4099	Honors Project I and Honors Project II	
MTH 4133	Service Learning in Mathematics	
Mathematics Majors - Required Courses		
CSC 3022	Data Management for Computational Science	2
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4
MTH 3083	Mathematical Probability and Statistics	3
Total Units		**26**