COMPUTATIONAL SCIENCE MINOR - BIOLOGY/GENETICS (BIOLOGY)

Core Courses for Biology/Genetics Emphasis

Biology Major

Code	Title	Units
Lower-Division Re	equirements	
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 Re	equirements	
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	4
CSC 3002	UNIX and Python Scripting for Computational Science	2
CSC 3011	Machine Learning and Multivariate Modeling in R	1
or CSC 3031	Data Visualization and Communication with R	
Project		
Choose at least th	ree (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 - Re	equired 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	Cell Biology and Biochemistry (FE)	4			
and BIO 2010L	and Cell Biology and Biochemistry Laboratory (FE	Ξ)			
CSC 1043	Introduction to Computer Programming	3			
and CSC 1043L	and Introduction to Computer Programming Lab				
Upper-Division Requirements					
BIO 3045	Genetics	4			
and BIO 3045L	and Genetics Laboratory				
CSC 3002	UNIX and Python Scripting for Computational Science	2			
CSC 3011	Machine Learning and Multivariate Modeling in R	1			
or CSC 3031	Data Visualization and Communication with R				
Project					
Choose at least th	nree (3) units from the following:	3			
CSC 4133	Service Learning in Computer Science				
HON 4098	Honors Project I				
and HON 4099	and Honors Project II				

Total Units		28
MTH 3083	Mathematical Probability and Statistics	3
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4
ISS 4014	Data Base Systems and Web Integration	4
Computer Scienc	e Majors - Required Courses	
MTH 4133	Service Learning in Mathematics	

Mathematics Majors

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Code	Title	Units
Lower-Division Re	equirements	
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 Re	equirements	
BIO 3045 and BIO 3045L	Genetics and Genetics Laboratory	4
CSC 3002	UNIX and Python Scripting for Computational Science	2
CSC 3011	Machine Learning and Multivariate Modeling in R	1
or CSC 3031	Data Visualization and Communication with R	
Project		
Choose at least th	ree (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 Majo	ors - Required Courses	
CSC 3022	Data Management for Computational Science	2
MTH 1064	Calculus I (FE)	4
and MTH 1064L	and Calculus I Lab (FE)	
MTH 3083	Mathematical Probability and Statistics	3
Total Units		26