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## COMPUTATIONAL SCIENCE MINOR - CHEMISTRY (CHEMISTRY)

## **Core Courses for Chemistry Emphasis** Chemistry Major

Code	Title	Units			
Lower-Division Requirements					
CHE 1052	General Chemistry I (FE)	5			
and CHE 1052L	and General Chemistry I Lab (FE)				
CHE 1053	General Chemistry II	4			
and CHE 1053L	and General Chemistry II Lab				
CSC 1043	Introduction to Computer Programming	3			
and CSC 1043L	and Introduction to Computer Programming Lab				
MTH 1064	Calculus I (FE)	4			
and MTH 1064L	and Calculus I Lab (FE)				
Upper-Division Re	•				
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 one (1) of	the following:	3			
CSC 4133	Service Learning in Computer Science				
HON 4098	Honors Project I				
and HON 4099	and Honors Project II				
MTH 4133	Service Learning in Mathematics				
Chemistry Major	Chemistry Major - Required Courses				
CHE 2013	Analytical Chemistry	3			
CHE 3025	Physical Chemistry I	4			
and CHE 3025L	and Physical Chemistry I Lab				
CSC 3022	Data Management for Computational Science	2			
MTH 3063	Calculus Based Statistics with R	3			
or MTH 3083	Mathematical Probability and Statistics				
Total Units					

## **Computer Science Major**

Code	Title	Units	
Lower-Division R	equirements		
CHE 1052 and CHE 1052L	General Chemistry I (FE) and General Chemistry I Lab (FE)	5	
CHE 1053 and CHE 1053L	General Chemistry II and General Chemistry II Lab	4	
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3	
MTH 1064 and MTH 1064L	Calculus I (FE) and Calculus I Lab (FE)	4	
Upper-Division Requirements			
CSC 3002	UNIX and Python Scripting for Computational Science	2	
CSC 3011	Machine Learning and Multivariate Modeling in F	R 1	

	, (,			
or CSC 3031	Data Visualization and Communication with R			
Project				
Choose one (1) of	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 Major - Required Courses				
ISS 4014	Data Base Systems and Web Integration	4		
MTH 3063	Calculus Based Statistics with R	3		
or MTH 3083	Mathematical Probability and Statistics			
Total Units		29		
Mathematics Majors				
Code	Title	Units		
Lower-Division Requirements				
CHE 1052 and CHE 1052L	General Chemistry I (FE) and General Chemistry I Lab (FE)	5		
CHE 1053 and CHE 1053L	General Chemistry II and General Chemistry II Lab	4		
CSC 1043 and CSC 1043L	Introduction to Computer Programming and Introduction to Computer Programming Lab	3		

## Upper-Division Requirements CSC 3002 UNIX and Python Scripting for Computational 2 Science CSC 3011 Machine Learning and Multivariate Modeling in R 1 or CSC 3031 Data Visualization and Communication with R

Calculus I (FE)

and MTH 1064L and Calculus I Lab (FE)

Choose one (1) of the following:

MTH 1064

**Project** 

**Total Units** 

	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	
M	athematics Majo	or - Required Courses	
Cŀ	HE 2013	Analytical Chemistry	3
	HE 3025	Physical Chemistry I	4
ar	d CHE 3025L	and Physical Chemistry I Lab	
CS	SC 3022	Data Management for Computational Science	2
M	TH 3083	Mathematical Probability and Statistics	3