COMPUTATIONAL SCIENCE MINOR - PHYSICS (MATHEMATICS AND COMPUTER SCIENCE)

Core Courses for Physics Emphasis

Physics Major [1]

Code	Title	Units
Lower-Division Requirements		
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
PHY 2044 and PHY 2044L	University Physics I (FE) and University Physics I Lab (FE)	4
PHY 2054 and PHY 2054L	University Physics II and University Physics II Lab	4
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
MTH 3063	Calculus Based Statistics with R	3
or MTH 3083	Mathematical Probability and Statistics	
Physics Major - Required Courses		
CSC 1054 and CSC 1054L	Objects and Elementary Data Structures and Objects and Elementary Data Structures Lab	4
CSC 3022	Data Management for Computational Science	2
EGR 1012 and EGR 1012L	Introduction to Engineering I and Introduction to Engineering I Lab	2
PHY 3004 and PHY 3004L	Modern Physics and Modern Physics Lab	4
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	
Total Units		**35**

[1] Minor Total for PHY Majors: 35 (11 units distinct from the major)

Electrical Engineering or Mechanical Engineering Physics Major [1]

Code	Title	Units
Lower-Division Requirements		
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
PHY 2044 and PHY 2044L	University Physics I (FE) and University Physics I Lab (FE)	4
PHY 2054 and PHY 2054L	University Physics II and University Physics II Lab	4
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
MTH 3063	Calculus Based Statistics with R	3
or MTH 3083	Mathematical Probability and Statistics	
Electrical Engineering or Mechanical Engineering Physics Major - Required Courses		
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
CSC 3022	Data Management for Computational Science	2
EGR 1012 and EGR 1012L	Introduction to Engineering I and Introduction to Engineering I Lab	2
Choose one (1) course from the following:		3-4
EGR 4013	Thermodynamics	
or PHY 4013	Thermodynamics	
PHY 3004 and PHY 3004L	Modern Physics and Modern Physics Lab	
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	
Total Units		**36-37**

[1] Minor Total for EGR Majors: 33 (9 units distinct from the major)

Computer Science Majors [1]

Code	Title	Units
Lower-Division Requirements		
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
PHY 2044 and PHY 2044L	University Physics I (FE) and University Physics I Lab (FE)	4
PHY 2054 and PHY 2054L	University Physics II and University Physics II Lab	4
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
MTH 3063	Calculus Based Statistics with R	3
or MTH 3083	Mathematical Probability and Statistics	
Computer Science Majors - Required Courses		
ISS 4014	Data Base Systems and Web Integration	4
CSC 3011	Machine Learning and Multivariate Modeling in R	1
or CSC 3031	Data Visualization and Communication with R	
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	
Total Units		**28**

[1] Minor Total for Computer Science Majors: 28 (12 units distinct from the major)

Mathematics Majors [1]

Code	Title	Units
Lower-Division Requirements		
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
PHY 2044 and PHY 2044L	University Physics I (FE) and University Physics I Lab (FE)	4
PHY 2054 and PHY 2054L	University Physics II and University Physics II Lab	4
Upper-Division Requirements		
CSC 3002	UNIX and Python Scripting for Computational Science	2
MTH 3063	Calculus Based Statistics with R	3
or MTH 3083	Mathematical Probability and Statistics	
Mathematics Majors - Required Courses		
CSC 3022	Data Management for Computational Science	2
PHY 3004 and PHY 3004L	Modern Physics and Modern Physics Lab	4
CSC 3011	Machine Learning and Multivariate Modeling in R	1
or CSC 3031	Data Visualization and Communication with R	
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	
Total Units		**30**

[1] Minor Total for Mathematics Majors: 32 (12 units distinct from the major)