

# COMBINED MAJOR IN COMPUTER SCIENCE AND MATHEMATICS - COMPUTER SECURITY TRACK

The combined major in Computer Science and Mathematics with a track in Computer Security requires 103–106 units completed with a grade equivalent of 2.00 or higher.

Code	Title	Units
<b>Required Courses</b>		
COSC 236	INTRODUCTION TO COMPUTER SCIENCE I	4
COSC 237	INTRODUCTION TO COMPUTER SCIENCE II	4
COSC 290	PRINCIPLES OF COMPUTER ORGANIZATION	4
COSC 336	DATA STRUCTURES AND ALGORITHM ANALYSIS	4
COSC 350	DATA COMMUNICATIONS AND NETWORKING	3
COSC 412	SOFTWARE ENGINEERING	3
COSC 439	OPERATING SYSTEMS	3
COSC 455	PROGRAMMING LANGUAGES: DESIGN & IMPLEMENTATION	3
COSC 457	DATABASE MANAGEMENT SYSTEMS	3
COSC 418	ETHICAL AND SOCIETAL CONCERNS OF COMPUTER SCIENTISTS	3
MATH 265	ELEMENTARY LINEAR ALGEBRA	4
MATH 267	INTRODUCTION TO ABSTRACT MATHEMATICS	4
MATH 273	CALCULUS I	4
MATH 274	CALCULUS II	4
MATH 275	CALCULUS III	4
MATH 330	INTRODUCTION TO STATISTICAL METHODS	4
MATH 314	INTRODUCTION TO CRYPTOGRAPHY <sup>1</sup>	3
or COSC 314	INTRODUCTION TO CRYPTOGRAPHY	
MATH 369	INTRODUCTION TO ABSTRACT ALGEBRA	4
MATH 465	THEORY OF NUMBERS	3
MATH 490	SENIOR SEMINAR IN MATHEMATICS	3
<b>Required Security Track Courses</b>		
COSC 310	SPECIAL TOPICS: ADVANCED PROGRAMMING	3
COSC 440	OPERATING SYSTEMS SECURITY	3
COSC 450	NETWORK SECURITY	3
COSC 458	APPLICATION SOFTWARE SECURITY	3
COSC 481	CASE STUDIES IN COMPUTER SECURITY	3
COSC 485	REVERSE ENGINEERING AND MALWARE ANALYSIS	3
<b>Science Requirement</b>		
Two lab science courses taken from physics, biology or chemistry <sup>2</sup>		8
<b>Elective Math/Science Courses</b>		
Select from the following:		4-6
MATH 265	ELEMENTARY LINEAR ALGEBRA	
MATH 275	CALCULUS III	
MATH 374	DIFFERENTIAL EQUATIONS	
MATH 377	MATHEMATICAL MODELS	
MATH 378	SCIENTIFIC MODELING AND SIMULATION	

MATH 435	NUMERICAL ANALYSIS I	
MATH 437	OPERATIONS RESEARCH	
MATH 451	GRAPH THEORY	
MATH 467	ALGEBRAIC STRUCTURES	
<b>Core Curriculum Requirement</b>		
COMM 131	PUBLIC SPEAKING <sup>3</sup>	3
Total Units		101-103

- <sup>1</sup> The MATH 314 and COSC 314 courses are double listed. Students should register for the course listed in their primary department.
- <sup>2</sup> Courses must be accepted in that major. A list of approved courses can be found on the department's website.
- <sup>3</sup> Completed with a grade equivalent of 2.00 or higher.

## Suggested Four-Year Plan

Based on course availability and student needs and preferences, the selected sequences will probably vary from those presented below. Students should consult with their adviser to make the most appropriate elective choices.

### Freshman

Term 1	Units	Term 2	Units
COSC 236	4	COSC 237	4
MATH 273 (Core 3)	4	MATH 265	4
ENGL 102 or TSEM 102 (Core 2 or 1)	3	MATH 274	4
Core	3	TSEM 102 or ENGL 102 (Core 1 or 2)	3
Core	3		
		17	15

### Sophomore

Term 1	Units	Term 2	Units
MATH 267	4	COSC 336	4
MATH 275	4	COSC 350	3
COSC 290	4	MATH 369	4
COSC 412	3	Core 8 - PHYS 242 suggested	3-4
Core 7 - PHYS 241 suggested	3-4	Core	3
		18-19	17-18

### Junior

Term 1	Units	Term 2	Units
COSC 310	3	COSC 457	3
COSC 439	3	COSC 458	3
COSC 455	3	MATH 330	4
MATH 314 or COSC 314	3	Core or COMM 131	3
MATH 435	3	Core	3
Core	3		
		18	16

### Senior

Term 1	Units	Term 2	Units
COSC 440	3	COSC 418	3
COSC 450	3	COSC 481	3
MATH 490	3	COSC 485	3

2 Combined Major in Computer Science and Mathematics - Computer Security Track

COMM 131 (or Core)	3 MATH 465	3
Core	3 MATH Upper-Level Elective	3-4
Core	3	
	18	15-16

Total Units 134-137