

MAJOR IN COMPUTER SCIENCE - COMPUTER SECURITY TRACK

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Code	Title	Units
Required Computer Science Courses		
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
Required Math Courses		
MATH 263	DISCRETE MATHEMATICS	3-4
or MATH 267	INTRODUCTION TO ABSTRACT MATHEMATICS	
MATH 273	CALCULUS I	4
MATH 274	CALCULUS II	4
MATH 314	INTRODUCTION TO CRYPTOGRAPHY	3
MATH 330	INTRODUCTION TO STATISTICAL METHODS	4
Required Security Track Courses		
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
Science Requirement		
Select two lab science courses from the following (the courses do not need to form a sequence):		8
ASTR 161	THE SKY AND THE SOLAR SYSTEM	
ASTR 181	STARS, GALAXIES, AND THE EARLY UNIVERSE	
BIOL 200 & 200L	INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE] and INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB]	
BIOL 202	INTRODUCTION TO ECOLOGY AND EVOLUTION	
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	
CHEM 132 & 132L	GENERAL CHEMISTRY II LECTURE and GENERAL CHEMISTRY II LABORATORY	

GEOL 121	PHYSICAL GEOLOGY	
PHYS 241	GENERAL PHYSICS I CALCULUS-BASED	
PHYS 242	GENERAL PHYSICS II CALCULUS-BASED	
Elective Math/Science Courses		
Select a minimum of 4 units in Math and/or Science courses from the following:		4
MATH 265	ELEMENTARY LINEAR ALGEBRA	
MATH 275	CALCULUS III	
MATH 315	APPLIED COMBINATORICS	
MATH 374	DIFFERENTIAL EQUATIONS	
MATH 377	MATHEMATICAL MODELS	
MATH 378	SCIENTIFIC MODELNG AND SIMULATION	
MATH 435	NUMERICAL ANALYSIS I	
MATH 437	OPERATIONS RESEARCH	
MATH 451	GRAPH THEORY	
MATH 467	ALGEBRAIC STRUCTURES	
BIOL 205	GENERAL BOTANY	
BIOL 207	GENERAL ZOOLOGY	
BIOL 309	GENETICS	
CHEM 210	ANALYTICAL CHEMISTRY	
CHEM 323	INORGANIC CHEMISTRY	
CHEM 331	ORGANIC CHEMISTRY I	
PHYS 243	GENERAL PHYSICS III	
PHYS 335	BASIC ELECTRONICS	
Other Requirements (9 units)		
Must be completed with a grade equivalent of 2.00 or higher.		
COMM 131	PUBLIC SPEAKING (Core 5)	3
COSC 418	ETHICAL AND SOCIETAL CONCERNS OF COMPUTER SCIENTISTS (Core 14)	3
ENGL 317	WRITING FOR BUSINESS AND INDUSTRY	3
Total Units		88-89

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 274	4
COMM 131	3 Lab-Science (from approved list)	4
Core	3 Core	3
14		15

Sophomore

Term 1	Units Term 2	Units
COSC 336	4 COSC 290	4
MATH 263	3 MATH 330	4
Lab-Science (from approved list)	4 COSC 412	3
Core	3 Core	3

Core		3
14		17
Junior		
Term 1	Units Term 2	Units
COSC 310	3 COSC 439	3
COSC 350	3 COSC 455	3
MATH 314	3 COSC 457	3
ENGL 317	3 COSC 418	3
Core 9	3 Core or Elective	3
15		15
Senior		
Term 1	Units Term 2	Units
COSC 440	3 COSC 481	3
COSC 450	3 COSC 485	3
COSC 458	3 Science/Math Elective (from approved list)	3
Core or Elective	3 Core or Elective	3
Core or Elective	3 Core or Elective	3
15		15

Total Units 120

An ability to analyze a problem and to identify and define the computing requirements appropriate to its solution.

An ability to design, implement and evaluate a computer-based solution to meet a given set of computing requirements in the context of the discipline.

An ability to communicate effectively with a range of audiences about technical information.

An ability to make informed judgements in computing practice based on legal and ethical principles.

An ability to function effectively on teams to establish goals, plan tasks, meet deadlines, manage risk and produce deliverables.

An ability to apply theory in the design and implementation of computer-based solutions.

An ability to reason about and explain computer-based solutions at multiple levels of abstraction.

An ability to apply security principles and practices to the environment, hardware, software, and human aspects of a system.

An ability to analyze and evaluate systems with respect to maintaining operations in the presence of risks and threats.