

# CYBERSECURITY AND INFORMATION ASSURANCE MAJOR

(B.S. in Applied Computer Science)

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## **Mission Statement**

The mission of the Cybersecurity and Information Assurance major is to enable students to earn a bachelor's degree in applied computer science while acquiring the skills and knowledge needed to pursue successful careers in a number of different fields relating to information security.

According to the U.S. Bureau of Labor Statistics (BLS), information security analyst jobs are projected to increase by 37% through 2022, which is much faster than the national average for all occupations. Potential job opportunities include: Information Security Analyst, Information Systems Security Engineer, Intrusion Detection System (IDS), administrator, engineer, or technician, Network Administrator, Computer Crime Investigator, Cyber Trainer, Chief Information Security Officer (CISO).

## **Program Description**

The Cybersecurity and Information Assurance major enables students to earn a bachelor's degree in applied computer science while acquiring the skills and knowledge needed to pursue successful careers in a number of different fields relating to information security. The curriculum emphasizes the practical application of the tools and techniques that cybersecurity professionals and network administrators utilize to identify security risks and devise solutions. A unique feature of the program is its emphasis on both technical skills and practical management tools which increase the versatility of graduates and their attractiveness to prospective employers in the private sector, government agencies and non-profit organizations. The curriculum also enables students to earn valuable industry-certified security certifications as they complete upper division coursework.

## **Program Outcomes**

The graduate will:

1. Apply knowledge of mathematics, programming, and computer networks to identify cyber security threats and define the resources and requirements needed for their solution.
2. Detect, assess, remediate, and communicate in both verbal and written formats, ongoing cyber security threats and vulnerabilities.
3. Identify professional, ethical, legal, and security issues and responsibilities, and the impact of computing on individuals, organizations and society.

## **What You Will Study**

The Cybersecurity & Information Assurance degree program consists of 76 credits of academic work, including 7 credits of mathematics. Students must also complete 44 credits of Liberal Learning Outcomes and electives for a minimum total of 120 credits.

## Standard Four-Year Path

FRESHMAN YEAR			
FALL SEMESTER		SPRING SEMESTER	
COMM 101 Freshman Writing I*	3	COMM 102 Freshman Writing II*	3
COSC 100 Introduction to Applied Computer Science	3	SPCH 103 Oral Comm. Fundamentals*	3
HUMN 1XX HUMN FYE	3	COSC 103 Coding II	4
MATH 201 Calculus I	4	SSCI 1XX Social Science FYE	3
COSC 102 Coding I	4	MATH 225 Discrete Math	3
UNIV 101 Orientation to University	1	UNIV 102 University Experience	2
<b>TOTAL CREDITS</b>	<b>18</b>	<b>TOTAL CREDITS</b>	<b>18</b>

\*These are not separate courses. The outcomes are embedded within HUMN, NSCI, SSCI, and UNIV courses.

SOPHOMORE YEAR			
FALL SEMESTER		SPRING SEMESTER	
COSC 203 Coding III	4	COSC 210 Software Engineering	3
COSC 220 Computer Organization & Assembly Language	3	COSC 310 Organization of Programming Languages	3
COSC 280 Applied Data Structures	3	COSC 315 Intro to Database Systems	3
CHEM 100 or NSCI 117	3	ENGL 203 British Lit: Romantic to 20th	3
Elective	3	Elective	3
<b>TOTAL CREDITS</b>	<b>16</b>	<b>TOTAL CREDITS</b>	<b>15</b>

JUNIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
COSC 345 Computer Networks	3	COSC 340 Operating Systems	3
COSC 360 Website Development	3	COSC 355 Mobile Computing	3
CYBR 310 Cybersecurity Strategy	3	CYBR 330 Incident Handling	3
CYBR 320 Ethical Hacking	3	CYBR 340 Security Analysis	3
Minor	3	Elective	3
<b>TOTAL CREDITS</b>	<b>15</b>	<b>TOTAL CREDITS</b>	<b>15</b>

SENIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
CYBR 410 Certified Information Systems Security Professional I	3	COSC 370 Security and Information Assurance	3
CYBR 440 Advanced Security Trends	3	CYBR 415 Certified Information Systems Security Professional II	3
Elective	3	CYBR 450 Cybersecurity Capstone	3
Elective	3	UNIV 4XX Senior LLO	3
<b>TOTAL CREDITS</b>	<b>12</b>	<b>TOTAL CREDITS</b>	<b>12</b>

## **Admission Requirements**

Students must gain general admission to the University of Charleston. A visit to campus to meet with Admissions personnel and program faculty is strongly encouraged.

## **Additional Requirements**

- Students must have a 27 ACT math score, or they must have completed MATH 123 before they are able to enroll in MATH 201.
- In order to graduate, a student must receive a minimum grade of “C” for each of the program courses.
- Applied Computer Science majors must meet all University of Charleston graduation requirements and successfully complete the Cybersecurity Capstone course.