

B.S. Computer Science, Emphasis in Cybersecurity

2023-24

WEBSITE

[https://www.swau.edu/
computer-science](https://www.swau.edu/computer-science)

DEPARTMENT PERSONNEL

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The primary mission of the Department of Computer Science is to prepare students for professional work in the field of computer science, within a Christian context. We believe that each of our students has a calling in life and that each is uniquely equipped with native talents to fulfill that calling. Our goal is to help our students to develop their talents to the full in order that they might be successful in meeting the challenges ahead of them.

The Bachelor of Science in Computer Science with an emphasis in cybersecurity is intended for students who wish to pursue careers in computer science, either in industry or in academia.

Job Market

Cybersecurity, ensuring the reliability, integrity, and availability of computational and communication systems has emerged as a high-demand specialty. Moreover, the dramatic increase in high-profile, high-stakes cyberattacks has resulted in a shortage of trained professionals needed to protect our information systems infrastructure against them. There is an urgent need for computer science professionals equipped to protect information systems and networks against such threats, help restore victims' systems after attacks, help law enforcement identify and prosecute cybercriminals, and to improve defenses as new threats emerge. With the projected high demand for professionals with the training to work in the area of cybersecurity, our graduates will be equipped to enter a field that is both challenging and rewarding.

Job Outlook

The world faces a current and growing workforce shortage of qualified cybersecurity professionals and practitioners. The magnitude of the predicted shortfall is staggering: sources project that the number of unfilled positions will reach 3.5 million by 2021.

Earnings

The average salary for information security analysts is \$98,350.



Required Courses

Item #	Title	Credits
CSIS 110	Principles of Computer Programming I	3
CSIS 111	Principles of Computer Programming II	3
CSIS 125	Discrete Structures I	3
CSIS 201	Information Literacy for CS Majors	1
CSIS 211	Data Structures and Algorithms	3
CSIS 215	Object-Oriented Programming in C++	3
CSIS 225	Discrete Structures II	3
CSIS 245	Introduction to Local Area Network Technology	4
CSIS 255	Issues and Practices in Information Security	3
CSIS 360	Operating Systems	3
CSIS 367	System & Network Hardening	3
CSIS 375	Introduction to Robotic Systems	4
CSIS 405	Formal Languages and Automata	3
CSIS 467	Cyber Forensics & Analysis	3
CSIS 490	Software Engineering	3
CSIS 492	Computer Science Internship	3
BUAD 202	Introduction to Contemporary Business	3
CRJ 311	Criminal Investigations	3
	Sub-Total Credits	54

Required Cognates

Item #	Title	Credits
COMM 115	Group Communication	3
MATH 141	Introduction to Probability and Statistics	3
	Sub-Total Credits	6

Curriculum Guide, Bachelor of Science, Computer Science, Cybersecurity

Emphasis

We strongly suggest that students seeking the Bachelor of Science in Computer Science with Emphasis in Cybersecurity plan to take their computer science courses in the following sequence:

Freshman Year, Fall Semester

Item #	Title	Credits
CSIS 110	Principles of Computer Programming I	3
CSIS 125	Discrete Structures I	3
	Sub-Total Credits	6

Freshman Year, Spring Semester

Item #	Title	Credits
CSIS 111	Principles of Computer Programming II	3
CSIS 225	Discrete Structures II	3
	Sub-Total Credits	6

Sophomore Year, Fall Semester

Item #	Title	Credits
CSIS 201	Information Literacy for CS Majors	1
CSIS 211	Data Structures and Algorithms	3
CSIS 245	Introduction to Local Area Network Technology	4
	Sub-Total Credits	8

Sophomore Year, Spring Semester

Item #	Title	Credits
CSIS 215	Object-Oriented Programming in C++	3
CSIS 255	Issues and Practices in Information Security	3
	Sub-Total Credits	6

Junior Year, Fall Semester

Item #	Title	Credits
CSIS 360	Operating Systems	3
BUAD 202	Introduction to Contemporary Business	3
CRJ 311	Criminal Investigations	3
	Sub-Total Credits	9

Junior Year, Spring Semester

Item #	Title	Credits
CSIS 375	Introduction to Robotic Systems	4
CSIS 367	System & Network Hardening	3
	Sub-Total Credits	7

Senior Year, Fall Semester

Item #	Title	Credits
CSIS 492	Computer Science Internship	3
CSIS 467	Cyber Forensics & Analysis	3
	Sub-Total Credits	6

Senior Year, Spring Semester

Item #	Title	Credits
CSIS 405	Formal Languages and Automata	3
CSIS 490	Software Engineering	3
	Sub-Total Credits	6

Sample 4 Year Curriculum

General Education Requirements

To view general education requirements for this major please visit: <https://catalog.swau.edu/core-curriculum-for-a-bachelors-degree>

First Year First Semester

Item #	Title	Credits
CSIS 110	Principles of Computer Programming I	3
CSIS 125	Discrete Structures I	3
ENGL 121	Freshman Composition	3
	History GE Requirement	3
UNIV 111	Wellness for Life	2
	Sub-Total Credits	14

First Year Second Semester

Item #	Title	Credits
CSIS 111	Principles of Computer Programming II	3
CSIS 225	Discrete Structures II	3
COMM 115	Group Communication	3
MATH 141	Introduction to Probability and Statistics	3
	Religion GE Requirement	3
	Sub-Total Credits	15

Second Year First Semester

Item #	Title	Credits
CSIS 201	Information Literacy for CS Majors	1
CSIS 211	Data Structures and Algorithms	3
CSIS 245	Introduction to Local Area Network Technology	4
ENGL 220	Research Writing	3
	Life and Physical Science GE Requirement	4
	Kinesiology GE Requirement	1
	Sub-Total Credits	16

Second Year Second Semester

Item #	Title	Credits
CSIS 215	Object-Oriented Programming in C++	3
CSIS 255	Issues and Practices in Information Security	3
	Religion GE Requirement	3
	Fine Arts GE Requirement	3
	History GE Requirement	3
	Sub-Total Credits	15

Third Year First Semester

Item #	Title	Credits
BUAD 202	Introduction to Contemporary Business	3
CRJ 311	Criminal Investigations	3
CSIS 360	Operating Systems	3
	Life and Physical Science GE Requirement	4
	Religion GE Requirement	3
	Sub-Total Credits	16

Third Year Second Semester

Item #	Title	Credits
CSIS 367	System & Network Hardening	3
CSIS 375	Introduction to Robotic Systems	4
	Elective Course for 120	3
	Elective Course for 120	3
	Kinesiology GE Requirement	1
	Social Science GE Curriculum Guide	3
	Sub-Total Credits	17

Fourth Year First Semester

Item #	Title	Credits
CSIS 467	Cyber Forensics & Analysis	3
CSIS 492	Computer Science Internship	3
	Elective Course for 120	3
	Literature GE Requirement	3
	Sub-Total Credits	12

Fourth Year Second Semester

Item #	Title	Credits
CSIS 405	Formal Languages and Automata	3
CSIS 490	Software Engineering	3
	Elective Course for 120	3
	Elective Course for 120	3
	Religion GE Requirement	3
	Sub-Total Credits	15

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Southwestern Adventist University—Office of Academic Administration