Cybersecurity BS

Overview

The **Bachelor of Science in Cybersecurity**, offered by he Department of Computer and Information Sciences (CIS), is designed to equip students with the knowledge and skills required to protect computer systems and networks from cyber threats. This program addresses the growing demand for cybersecurity professionals by providing students with both strong technical foundations and hands-on experience.

The curriculum consists of a set of foundation courses that provide a broad base in computing, required security courses that focus on particular cybersecurity skills, security breadth courses, and a wide variety of electives so that students can develop further specialization and tailor their education to match their interests.

Campus Location: Main

Program Code: ST-CYBR-BS

Distinction in Major

To graduate with distinction in this major, as student must satisfy the following criteria:

- have a minimum 3.50 major GPA and
- have a minimum 3.50 cumulative GPA.

Undergraduate Contact Information

Jamie Payton, Chair
Science, Education and Research Center, Room 304
215-204-8450

Gene Kwatny, Vice Chair
Science, Education and Research Center, Room 304
215-204-8450

John Fiore, Faculty Advisor
Science, Education and Research Center, Room 321
215-204-3357
john.fiore@temple.edu

These requirements are for students who matriculated in academic year 2024-2025. Students who matriculated prior to fall 2024 should refer to the Archives *to view the requirements for their Bulletin year.*

Bachelor of Science Requirements

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
   - Students must complete all University requirements including those listed below.
   - All undergraduate students must complete at least two writing-intensive courses for a total of at least six credits at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
SCTC 2396	Writing for Science and Technology	3
CIS 4X9X		3

   - Students must complete the General Education (GenEd) requirements.
     - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
     - Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
   - Students must satisfy general Temple University residency requirements.
2. College Requirements
   - A minimum of 90 total credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), and/or the College of Engineering (ENG).
     - A minimum of 45 of these credits must be upper-level (courses numbered 2000 and above).
   - Complete a one-credit first-year or transfer seminar.

- SCTC 1001 CST First Year Seminar for every entering first-year CST student.
- SCTC 2001 CST Transfer Seminar for every entering transfer CST student.

3. Major Requirements for Bachelor of Science (75-76 s.h.)

At least 9 courses required for the major must be completed at Temple. At least 8 CIS courses must be completed at Temple.

Code	Title	Credit Hours
Computer and Information Science		
CIS 1001	Introduction to Academics in Computer Science	1
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
or CIS 1951	Honors Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1068	Program Design and Abstraction	4
or CIS 1968	Honors Program Design and Abstraction	
CIS 1166	Mathematical Concepts in Computing I	4
or CIS 1966	Honors Mathematical Concepts in Computing I	
CIS 2107	Computer Systems and Low-Level Programming	4
or CIS 2229	Architecture, Operating Systems and Networking	
CIS 2109	Database Management Systems	4
or CIS 4331	Principles of Database Systems	
CIS 2168	Data Structures	4
CIS 3329	Network Architectures	4
or CIS 4319	Computer Networks and Communications	
CIS 3441	Software Security	3
CIS 3605	Introduction to Digital Forensics	3
or CJ 3506	Cyber-Investigations, Digital Forensics, and the Law	
CIS 4378	Computer and Network Security	4
CIS 4X9X		3
Cybersecurity Breadth Requirement		
Select one of the following: [1]		3-4
CIS 3319	Wireless Networks and Security	
CIS 3374	Quality Assurance & Testing (F)	
CIS 4419	Securing the Internet of Things	
CIS 4625	Audit and Compliance for Security and Digital Forensics	
CJ 3007	Cybercrime	
Cybersecurity Electives		
Select a minimum of 12 credits from the following elective courses:		12
CIS 3100	Special Topics in CIS	
CIS 3203	Introduction to Artificial Intelligence	
CIS 3207	Introduction to Systems Programming and Operating Systems	
CIS 3211	Automata, Computability, and Languages	
CIS 3217	Computer Architecture	
CIS 3223	Data Structures and Algorithms	
CIS 3281	Cooperative Education Experience in Information Science & Technology [2]	
CIS 3296	Software Design	
CIS 3308	Web Application Programming	
CIS 3309	Component-Based Software Design	
CIS 3319	Wireless Networks and Security	
CIS 3342	Server-Side Web Application Development	
CIS 3344	Client-Side Scripting for the Web	
CIS 3374	Quality Assurance & Testing	
CIS 3381	Cooperative Education Experience in Computer Science [2]	
CIS 3513	Introduction to iOS Application Development	

CIS 3515	Introduction to Mobile Application Development	
CIS 3603	User Experience Design	
CIS 3715	Principles of Data Science	
CIS 3755	Introduction to Information Visualization	
CIS 4282	Independent Study [2]	
CIS 4307	Introduction to Distributed Systems and Networks	
CIS 4324	Compiler Design	
CIS 4330	Current Topics in Information Science & Technology	
CIS 4340	Seminar in Information Science & Technology (S)	
CIS 4344	Advanced Web Application Design & Scripting	
CIS 4345	Introduction to Cloud Computing	
CIS 4350	Seminar on Topics in Computer Science (F)	
CIS 4360	Seminar on Topics in Computer Science	
CIS 4382	Independent Study [2]	
CIS 4419	Securing the Internet of Things	
CIS 4515	Advanced Mobile Application Development	
CIS 4517	Data-Intensive and Cloud Computing	
CIS 4523	Knowledge Discovery and Data Mining	
CIS 4524	Analysis and Modeling of Social and Information Networks	
CIS 4526	Foundations of Machine Learning	
CIS 4625	Audit and Compliance for Security and Digital Forensics	
CJ 3007	Cybercrime	
CJ 3401	White Collar Crime	
CJ 3403	Organized Crime	
CJ 3404	Urban Crime Patterns	
CJ 3405	Terrorism, Transnational Crime and Global Security	
POLS 2232	Cyberpolitics	
Other courses communicated to the students by the Cybersecurity faculty advisor.		
Mathematics		
Select one of the following: [3]		4
MATH 1031	Differential and Integral Calculus	
MATH 1041	Calculus I	
MATH 1941	Honors Calculus I	
MATH 2031	Probability and Statistics	3
Laboratory Science courses		
Two (2) laboratory science courses [4]		8
Writing Intensive Course		
SCTC 2396	Writing for Science and Technology	3
Total Credit Hours		**75-76**

Code	Title	Credit Hours
(F) - Fall only course		
(S) - Spring only course		

[1] The courses not selected may be taken as a Cybersecurity elective.

[2] A maximum of eight (8) credits from CIS 3281, CIS 3381, CIS 4282, and/or CIS 4382 may be used to fulfill Cybersecurity elective requirements. In addition, a maximum of four (4) credits may be taken from CIS 3281 and/or CIS 3381 to fulfill Cybersecurity elective requirements.

[3] Cybersecurity majors are required to have completed MATH 1022. They can then choose either MATH 1031, MATH 1041 or MATH 1941.

[4] Must select within a Sequence for Laboratory Science A and Laboratory Science B. See the Sequenced Laboratory Science list below for the science options.

Sequenced Cybersecurity Laboratory Science Requirements

Code	Title	Credit Hours
Biology Sequence		
Select one Biology Lab Science A:		
BIOL 1011	General Biology I	
BIOL 1111	Introduction to Organismal Biology	
BIOL 1911	Honors Introduction to Organismal Biology (S)	
Select one Biology Lab Science B:		
BIOL 1012	General Biology II	
BIOL 1112	Introduction to Biomolecules, Cells and Genomes	
BIOL 1912	Honors Introduction to Biomolecules, Cells and Genomes	
BIOL 2112	Introduction to Cellular and Molecular Biology	
BIOL 2912	Honors Introduction to Cellular and Molecular Biology (F)	
Chemistry Sequence [1]		
Select one Chemistry Lab Science A:		
CHEM 1021 & CHEM 1023	Introduction to Chemistry I and Introduction to Chemistry Laboratory I	
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I	
Select one Chemistry Lab Science B:		
CHEM 1022 & CHEM 1024	Introduction to Chemistry II and Introduction to Chemistry Laboratory II	
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II	
Earth & Environmental Science Sequence [2]		
Select this Lab Science A:		
EES 2001	Physical Geology	
Select one Lab Science B:		
EES 2011	Mineralogy I (with CHEM 1031 prerequisite)	
EES 2021	Sedimentary Environments (no CHEM 1031 prerequisite)	
EES 2061	Introduction to Geochemistry (with CHEM 1031 prerequisite)	
Physics Sequence [3]		
Select one Physics Lab Science A:		
PHYS 1021	Introduction to General Physics I	
PHYS 1061	Elementary Classical Physics I	
PHYS 1961	Honors Elementary Classical Physics I (F)	
PHYS 2021	General Physics I	
PHYS 2921	Honors General Physics I (F)	
Select one Physics Lab Science B:		
PHYS 1022	Introduction to General Physics II	
PHYS 1062	Elementary Classical Physics II	
PHYS 1962	Honors Elementary Classical Physics II (S)	
PHYS 2022	General Physics II	
PHYS 2922	Honors General Physics II (S)	

[1]   Students can choose to mix-and-match the Chemistry Sequence A and B courses. However, they must take at least 1 course from Chemistry Sequence A and 1 from Chemistry Sequence B. Note: Chemistry courses consist of a three-credit lecture plus a one-credit lab.

[2]   For the EES Sequence, two of the three Lab Science B options require students to take CHEM 1031 as a prerequisite, but EES 2021 does not.

³   Students can choose to mix-and-match the Physics Sequence A and B courses. However, they must take at least 1 course from Physics Sequence A and 1 from Physics Sequence B.

Suggested Academic Plan

Bachelor of Science in Cybersecurity

Suggested Plan for New Students Starting in the 2024-2025 Academic Year

Year 1		
Fall		**Credit Hours**
CIS 1001	Introduction to Academics in Computer Science	1
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
CIS 1951	Honors Introduction to Problem Solving and Programming in Python	
Select one of the following: [1]		4
MATH 1031	Differential and Integral Calculus	
MATH 1041	Calculus I	
MATH 1941	Honors Calculus I	
SCTC 1001	CST First Year Seminar	1
GenEd Breadth Course		3
GenEd Breadth Course		3
	Credit Hours	**16**
Spring		

CIS 1068
  or CIS 1968
	Program Design and Abstraction
	    or Honors Program Design and Abstraction
		4

CIS 1166
  or CIS 1966
	Mathematical Concepts in Computing I
	    or Honors Mathematical Concepts in Computing I
		4

ENG 0802
  or ENG 0812
  or ENG 0902
	Analytical Reading and Writing [GW]
	    or Analytical Reading and Writing: ESL [GW]
	    or Honors Analytical Reading and Writing [GW]
		4

GenEd Breadth Course		3
	Credit Hours	**15**
Year 2		
Fall		
CIS 2168	Data Structures	4
Select one of the following:		4
CIS 2107	Computer Systems and Low-Level Programming	
CIS 2229	Architecture, Operating Systems and Networking	
MATH 2031	Probability and Statistics	3

IH 0851
  or IH 0951
	Intellectual Heritage I: The Good Life [GY]
	    or Honors Intellectual Heritage I: The Good Life [GY]
		3

GenEd Breadth Course		3
	Credit Hours	**17**
Spring		
Select one of the following:		4
CIS 2109	Database Management Systems	
CIS 4331	Principles of Database Systems [2]	
Select one of the following:		4
CIS 3329	Network Architectures	
CIS 4319	Computer Networks and Communications [3]	

IH 0852
  or IH 0952
	Intellectual Heritage II: The Common Good [GZ]
	    or Honors Intellectual Heritage II: The Common Good [GZ]
		3

Elective		3

Elective		1
	Credit Hours	**15**
Year 3		
Fall		
CIS 3441	Software Security	3
Cybersecurity Elective [4]		3-4
Lab Science A		4
GenEd Breadth Course		3-4
Elective		2-0
	Credit Hours	**15**
Spring		
Select one of the following:		3
CIS 3605	Introduction to Digital Forensics	
CJ 3506	Cyber-Investigations, Digital Forensics, and the Law	
CIS 4378	Computer and Network Security	4
SCTC 2396	Writing for Science and Technology [WI]	3
Lab Science B		4
	Credit Hours	**14**
Year 4		
Fall		
CIS 4X9X		3
Cybersecurity Breadth Requirement - Select one of the following		3-4
CIS 3319	Wireless Networks and Security	
CIS 3374	Quality Assurance & Testing	
CIS 4419	Securing the Internet of Things	
CIS 4625	Audit and Compliance for Security and Digital Forensics	
CJ 3007	Cybercrime	
Cybersecurity Elective [4]		3-4
Elective		3
Elective		3-1
	Credit Hours	**15**
Spring		
Cybersecurity Elective [4]		3-4
Cybersecurity Elective [4, 5]		3-4
Elective		3
Elective		3
Elective		4-2
	Credit Hours	**16**
	Total Credit Hours	**123**

[1]   Cybersecurity majors are required to have completed MATH 1022. They can then choose either MATH 1031, MATH 1041, or MATH 1941.

[2]   CIS 4331 will require additional prerequisites.

[3]   CIS 4319 will require additional prerequisites.

[4]   Select from the Cybersecurity Electives list under Requirements. Some of these courses require additional prerequisites.

[5]   Students must complete a minimum of 12 credits of Cybersecurity Electives. If the student has completed all 12 credits of the Cybersecurity Electives, this course can be additional free elective credits.