

## Bachelor of Science (BS)

# Cybersecurity

Cybersecurity is a national security issue and an economic concern for the U.S. Southeast was the first university in Missouri and one of fewer than 50 in the country to offer a cybersecurity bachelor's degree. This new, dynamic major prepares students to be leaders in the protection of information systems.



This innovative program includes courses such as computer science and software engineering along with information assurance, computer forensics, network security and cryptography. Students learn to use technology to secure and defend cyber enabled systems.

The cybersecurity program at Southeast aims to educate students in the existing and emerging challenges in security and privacy of cyber infrastructure within ethical boundaries and legal compliances. Security for such an infrastructure involves nearly every aspect of software and hardware. This corresponds well with the Department of Labor's description of an information security analyst, whose typical duties are to research security trends, monitor and investigate security breaches to the network, plan and carry out security initiatives, develop standards and best practices, use tools to protect sensitive information, make recommendations for security enhancements and help users learn and use security products and procedures.

### Becoming Career Ready...

/ Highly trained faculty with real-world experience interact with students and teach in state-of-the-art facilities in Dempster Hall using the latest developments in this high-tech, high-security area.

/ Cybersecurity graduates work in virtually every industry including public, private and government agencies. Example job titles include Security Analyst, Security Software Developer, Cryptanalyst, Security Engineer and Security Administrators and Consultants.

/ Students are engaged throughout the curriculum to protect an organization's vital information and assets, understand and develop software to minimize vulnerabilities and analyze persistent threats and arrange counter measures by conducting risk and liability assessments of information systems.

/ 100% of Southeast programs offer real-world experience. Cybersecurity students earn this experience through the departments cyber range, providing an enhanced environment for specialized cybersecurity testing and training. It will serve as both a resource to students and faculty and assist in providing the infrastructure to host and promote education and training opportunities.

/ The path to a successful career starts with you! You can maximize your career development by working closely with Career Services and Southeast faculty – they are here to help you connect your passions, interests and skills to jobs and opportunities in the field. Career Services provides professional career counseling and coaching, resume critiques, practice interviews, job search strategies, career events, networking opportunities and more.



### Cybersecurity Students Enjoy Various Employment Opportunities:

- Information Security Crime Investigator/Forensics Expert
- System, Network and/or Web Penetration Tester
- Security Architect
- Malware Analyst
- Network Security Engineer
- Vulnerability Researcher/Exploit Developer
- Security Auditor
- Embedded Security Engineer
- Software Security Engineer

### Our Cybersecurity Students Have Interned & Recently Become Employed by:

- FireEye Mandiant
- CrowdStrike
- Emerson Electric Company
- Enterprise Holding
- Accretive Health
- Big-River Communications
- MasterCard

### Professional and Student Organizations

#### Cyber Defense Club

The purpose of the Cyber Defense Club is to promote the cybersecurity degree in an academic, professional and ethical manner as established by the "Unified Framework of Professional Ethics for Security Professionals", to work toward and establish a team to compete in the Collegiate Cyber Defense Competition, and to assist in promoting the cybersecurity degree program and assist in obtaining accreditation through the National Security Agency (NSA).

In 2021, Southeast Cyber Defense Team won its 9<sup>th</sup> consecutive State Championship.

#### Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at [semo.edu/transfercredit](http://semo.edu/transfercredit).



**To learn more**  
Office of Admissions  
(573) 651-2590  
[admissions@semo.edu](mailto:admissions@semo.edu)  
[semo.edu](http://semo.edu)

**To explore**  
the Harrison College of Business  
and Computing online, visit  
[semo.edu/business-computing](http://semo.edu/business-computing)

**For advising**  
Center for Academic Advising  
[semo.edu/advising](http://semo.edu/advising)

## Bachelor of Science (BS)

This is a guide based on the 2021-2022 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use Degree Works to monitor their individual progress.

### CURRICULUM CHECKLIST

#### Cybersecurity – 78 Hours – No Minor Required

- \_\_\_ BA 252 Business Communication (2)
- \_\_\_ CS 101 Intro to Computer Programming (3)
- \_\_\_ CS 155 Computer Science I (4)
- \_\_\_ CS 245 Discrete Structures I (3)
- \_\_\_ CS 265 Computer Science II (4)
- \_\_\_ CS 288 Computer Systems & Assembly Language (4)
- \_\_\_ CS 351 C & the Posix Environment (4)
- \_\_\_ CS 380 Computer Operating Systems (3)
- \_\_\_ CS 440 Database (3)
- \_\_\_ CS 445 Software Engineering I (3)
- \_\_\_ CS 499 Capstone Experience (3)
- \_\_\_ CS 533 Mobile Computing (3)
- \_\_\_ CY 201 introduction to Cybersecurity (3)
- \_\_\_ CY 310 Information Security & Assurance (3)
- \_\_\_ CY 320 Information Security in System Administration (3)
- \_\_\_ CY 410 Web Application Security (3)
- \_\_\_ CY 420 Computer Forensics (3)
- \_\_\_ CY 440 Cloud Computing (3)
- \_\_\_ CY 450 Introduction to Cyber Operations (3)
- \_\_\_ IS 245 Web Development & Security (3)
- \_\_\_ IS 299 Security in Data Protocols (3)
- \_\_\_ MA 223 Elementary Probability & Statistics (3)
- \_\_\_ MA 464 Mathematical Cryptography (3)
- \_\_\_ TN 275 Introduction to Networks (3)
- Choose 3 hours:
  - \_\_\_ CS 480 Data Communications (3)
  - \_\_\_ TN 375 Routing & Switching Essentials (3)

**General Education Requirements** – some requirements may be fulfilled by coursework in major program

- Social and Behavioral Sciences – 6 hours
- Constitution Requirement – 3 hours
- Written Communication – 6 hours
- Oral Communication – 3 hours
- Natural Sciences – 7 hours (from two disciplines, one to include a lab)
- Mathematics – 3 hours
- Humanities & Fine Arts – 9 hours (from at least two disciplines)
- Additional requirements – 5 hours (to include UI100 for native students)
- Civics examination

### SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
<b>FIRST YEAR</b>	UI100	1	BA252	2
	EN100	3	CS155	4
	CS101	3	CS245	3
	MA116*	3	IS245	3
	General Education	3	MA223	3
	General Education	3		
<b>Total</b>	<b>16</b>		<b>Total</b>	<b>15</b>
<b>SECOND YEAR</b>	CS265	4	CS380	3
	CS288	4	CY201	3
	CS351	4	IS299	3
	TN275	3	MA464	3
			General Education	3
	<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>
<i>(summer courses are encouraged to avoid 18 hour semesters)</i>				
<b>THIRD YEAR</b>	CS480 or TN375	3	CS533	3
	CY310	3	CY410	3
	CY320	3	CY420	3
	General Education	3	General Education	3-4
	General Education	3	General Education	3
	<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15-16</b>
<b>FOURTH YEAR</b>	CS440	3	CS499	3
	CS445	3	CY450	3
	CY440	3	General Education	3
	General Education	3	General Education	3
	General Education	3-4	General Education	3
	<b>Total</b>	<b>15-16</b>	<b>Total</b>	<b>15</b>

\*MA116 is a prerequisite to MA223.

**Degree requirements for all students:** a minimum of 120 credit hours, completion of the General Education program, and completion of 39 senior division hours (300-599). Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.

All Harrison College of Business and Computing majors are encouraged to study abroad during their junior or senior year. Numerous opportunities exist from 10 days to a full semester. Programs are available in which all classes are taught in English and tuition rates are the same as Southeast's.

Revised  
6/15/2021

Degree Map 2021-2022

**To learn more**  
Office of Admissions  
(573) 651-2590  
admissions@semo.edu  
semo.edu

**To explore**  
the Harrison College of Business  
and Computing online, visit  
semo.edu/business-computing

**For advising**  
Center for Academic Advising  
semo.edu/advising