

# Cybersecurity

## Bachelor of Science (BS)

# Cybersecurity

Cybersecurity is a national security issue and an economic concern for the U.S. Southeast is the only 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 telecommunications, computer science and mathematics 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. Cyber infrastructure is an amalgamation of software, hardware and networking to process, transform and communicate digital content. Security for such an infrastructure involves nearly every aspect of software, hardware and networking. 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.

### Cybersecurity graduates will be able to...

- Protect an organization's vital information and assets.
- Implement cybersecurity best practices and risk management.
- Understand and develop software to minimize vulnerabilities.
- Integrate stable network monitoring and present real-time security solutions.
- Analyze persistent threats and arrange counter measures.
- Conduct risk and liability assessments of information systems.
- Examine cybercrimes and support recovery of operations.
- Create, revise and communicate organizational cybersecurity strategies.

### Career Planning

Career preparation is part of the mission of Southeast. In fact, more than 90% of Southeast students participate in internships, clinical opportunities, student teaching, research assistantships, and study abroad. Professional career counselors are available for all students. The Office of Career Services in Academic Hall 057 can provide students with professional career counseling, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more.

Demonstrated Career Proficiency is a Requirement of all Southeast Students		
CL001/CL002	First Semester	Complete the FOCUS2 assessment and develop a Career Action Plan.
CL003	Junior Year	Students gain information about career planning and job searching resources.
CL004	Senior Year	Students demonstrate advanced proficiency by identifying a position in their field, developing a cover letter, and tailoring a resume for the position. Materials are critiqued to ensure preparedness for a successful job search.

### Career 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

### Internship Opportunities and Employment of Recent Graduates

- Emerson Electric Company, St. Louis, Mo.
- Enterprise Holding, St. Louis, Mo.
- Accretive Health, Cape Girardeau, Mo.
- Sword and Shield, Knoxville, Tenn.

### 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).

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

**To explore the College of  
Science, Technology, and  
Agriculture online, visit**  
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**For advising**  
College of Science, Technology and Agriculture  
Advising Center (573) 651-5930  
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This is a guide based on the 2015-2016 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 DegreeWorks to monitor their individual progress.

### CURRICULUM CHECKLIST

#### Cybersecurity Core – 88 Hours – No Minor Required

- \_\_\_ CS155 Computer Science I (4)
- \_\_\_ CS265 Computer Science II (4)
- \_\_\_ CS315 C & the UNIX Environ (3)
- \_\_\_ CY201 Introduction to Cybersecurity (3)
- \_\_\_ CY310 Information Security & Assurance (3)
- \_\_\_ CY320 Information Security in System Administration (3)
- \_\_\_ CY410 Web Application Security (3)
- \_\_\_ CY420 Computer Forensics (3)
- \_\_\_ ET245 Logic Circuits (3)
- \_\_\_ ET366 Microcontrollers (3)
- \_\_\_ IM102 Technical Communications (3)
- \_\_\_ IS245 Web Development & Security (3)
- \_\_\_ IS375 Database & Info Systems (3)
- \_\_\_ MA133 Plane Trigonometry (3)
- \_\_\_ MA134 College Algebra (3)
- \_\_\_ MA223 Elementary Probability & Statistics (3)
- \_\_\_ MA464 Mathematical Cryptography (3)
- \_\_\_ MN220 Engineering Economic Analysis (3)
- \_\_\_ PH120 Introductory Physics I (5)
- \_\_\_ SW207 Understanding Culture & Social Diversity (3)
- \_\_\_ TN254 Network Communications (3)
- \_\_\_ TN255 Microcomputer Maintenance (3)
- \_\_\_ TN275 Introduction to Networks (3)
- \_\_\_ TN375 Network Routing Protocol & Concepts (3)
- \_\_\_ TN395 Server Maintenance and Troubleshooting (3)
- \_\_\_ TN425 Wireless Communication & Mobile Data Networks (3)
- \_\_\_ TN435 Network Security (3)
- \_\_\_ UI410 Manufacturing Research in a Global Society (3)

#### University Studies Requirements (not already listed above):

UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literary Expression, Behavioral Systems, Living Systems, Development of a Major Civilization, Political Systems, and two IU/UI3XXs

### SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
<b>FIRST YEAR</b>	UI100	3	CS155	4
	EN100	3	IM102	3
	ET245	3	MA133	3
	MA134	3	TN254	3
	TN255	3	Behavioral Systems	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>16</b>	
<b>SECOND YEAR</b>	CS265	4	CY201	3
	MA223	3	ET366	3
	PH120	5	MA464	3
	TN275	3	TN375	3
	Artistic Expression	3	Written Expression	3
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>15</b>	
<i>(summer courses are encouraged to avoid 18 hour semesters)</i>				
<b>THIRD YEAR</b>	CY310	3	CS315	3
	IS245	3	CY320	3
	SW207	3	IS375	3
	TN425	3	TN395	3
	Living Systems	3	Oral Expression	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>	
<b>FOURTH YEAR</b>	CY410	3	CY420	3
	MN220	3	TN435	3
	Develop of a Major Civ	3	UI410	3
	Literary Expression	3	IU/UI3XX	3
	Political Systems	3	IU/UI3XX	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>	

**Degree requirements for all students:** a minimum of 120 credit hours, completion of University Studies program, career proficiencies (CL001-004), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level.

Refer to the Undergraduate Bulletin or DegreeWorks for additional graduation requirements (i.e. minimum GPA and coursework) for your program of study.

Revised  
3/19/2015