

# Cybersecurity Major

## **Bachelor of Science in Cybersecurity Degree Mission Statement**

The mission of the Cybersecurity Department is to equip students with knowledge necessary for them to serve in today's competitive business environment and to cultivate in all students, at all levels, (undergraduate and graduate) a data-driven approach and ethical spirit in their approaches to business decision making.

## **Cybersecurity Program Goals**

1. Ability to integrate Christian worldview and ethics in the work environment.
2. Knowledge and experience in information systems technology on business functional areas.
3. Knowledge and experience in Cybersecurity to support organizational mission and goals.
4. Critical thinking, analytical, and problem-solving skills.
5. Effective communications and interpersonal and team skills.

## **Why Study Cybersecurity at Montreat College?**

The program builds upon Montreat College's strong liberal arts core with extensive training and preparation in information technology, cybersecurity, business administration, and quantitative analysis, preparing students for entry-level professional positions in a variety of technology specializations. Our unique approach to teaching combines the theoretical with the practical, as faculty bring extensive real-world technology experience to the classroom. Small classes provide personal attention and one-on-one interaction with professors. Classroom instruction is often augmented with outside technology speakers and information technology facility visits. In many courses, student projects involve solving technology problems and providing information technology services to actual real-world organizations. Additionally, all students complete a cybersecurity internship prior to graduation. These internships can lead to permanent employment opportunities.

**Montreat College has been designated by the National Security Agency and the Department of Homeland Security as a National Center of Academic Excellence in Cyber Defense Education. This designation is reflected on the transcripts of students completing the Bachelor of Science in Cyber Security program. After Graduation**

The Cybersecurity degree program prepares graduates for a variety of careers in consulting, financial and banking institutions, health care, services and manufacturing industries, government, and not-for-profit organizations. A graduate of the major may look forward to a Cybersecurity career to support

information technology fields such as incident response and business continuity analysis, information systems analysis, programming, database administration, web development, network engineering, systems administration, security analysis, vulnerability assessment, penetration testing or enterprise consulting. According to the Bureau of Labor Statistics, these fields are expected to be among the fastest growing occupations through 2020. Employment of cybersecurity professionals are expected to grow much faster than the average for all occupations as organizations continue to adopt and integrate increasingly sophisticated cybersecurity technologies. Average annual salaries in these fields are well above those in many other professional occupations. Further, many information technology occupations offer broad opportunities to influence others for Christ.

### **Requirements for a Major in Cybersecurity**

- Degree Component**
- Completion of the General Education Core (55 Credits)
- MT 114 is required in the Gen-Ed
- Completion of the General Education Competencies
- Completion of the Cybersecurity Major Core (62 credits)
- Completion of the Cybersecurity Major Electives (8 credits)
- Completion of the Business Electives Requirement (3 credits)
- Completion of 27 credits at the 300-level or above
- Completion of 125 credit hours with a minimum GPA of 2.0 (two terms and 32 hours must be completed at Montreat college)

### **Cybersecurity Major Core (59 credits)**

- BS 101 Introduction to Business (3)
- CS 109 Introduction to Computer Hardware (3)
- CS 110 Introduction to Operating Systems (3)
- CS 122 Introduction to Computer Programming (3)
- CS 215 Introduction to Computer Networking (3)
- CS 222 Introduction to Secure Scripting (3)
- CS 289 Cyber Defense I (2)
- CS 310 Database Programming (3)
- CS 335 Computer and Systems Security (3)
- CS 341 Internship I (3)
- CS 345 Principles of Cybersecurity (3)
- CS 350 Management of Cybersecurity (3)
- CS 365 The 3 C's: Cybercrime, Cyber Law & Cyber Ethics (3)
- CS 370 Network Defense and Countermeasures (3)
- CS 375 Linux Operating Systems and Security (3)
- CS 389 Cyber Defense II (2)
- CS 428 Penetration Testing (3)
- CS 441 Internship II (3)
- CS 448 Incident Response and Contingency Planning (3)
- IS 311 Pre-Internship (1)
- MT 121 College Algebra (3)

**Required Major Electives (choose 8 hours)**

- CS 204 Fund. Of Information Systems (3)
- CS 287 Cyber Competition I (2)
- CS 322 Introduction to Secure Mobile App & Web Development (3)
- CS 355 Project Management in IT and Cybersecurity (3)
- CS 380 Certification Study and Preparation (3)
- CS 387 Cyber Competition II (2)
- CS 411 Introduction to Data Science in Cybersecurity (3)
- CS 438 System Forensics (3)
- CS 445 Introduction to Cloud Security (3)
- CS 480 Special Topics (3)
- CS 481 Directed Study and Research (1-3)
- CS 487 Cyber Competition III (2)
- CS 489 Cyber Defense III (2)

**Business Elective (3 credits)****Cybersecurity Extended Internship**

The Cybersecurity program offers an extended internship option for majors. This opportunity is open to cybersecurity majors who have identified a full- or nearly full-time (400+ hours or approximately 30 hours a week) internship for the duration of one semester.

- Students will be required to complete and receive approval of a Learning Contract for the extended internship experience.
- The extended internship will combine classroom-based education with practical work experience and provide academic credit for a structured job experience.
- Students will receive 9 credit hours for CS 341, CS 441, and 3 major elective credits through CS 481 Directed Study.
- Student can complete additional 3-6 credits in online courses to remain a full-time student
- The academic department and on-site supervisor share responsibility for supervision, evaluation, and assessment
- Internship site will have clear teaching goals for hands on experience, and faculty would work with the site to determine learning outcomes for the experience.

<b>Four Year Plan: Bachelor of Science in Cybersecurity</b>			
<b>Freshman Year</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
IS 102 Foundations of Faith and Learning	2	BB 102 Survey of New Testament	3
BB 101 Survey of Old Testament	3	EN 102 English Composition II	3
EN 101 English Composition I	3	CS 102 Computer Applications and Concepts (or Exam)	3
CS 109 Introduction to Computer Hardware	3	CS 110 Introduction to Operating Systems	3
Gen-Ed Natural Science	4	Gen-Ed Natural Science	3
	<b>15</b>		<b>15</b>
<b>Sophomore Year</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
HS 101 History of World Civilization I	3	HS 102 History of World Civilization II	3
CS 215 Intro to Computer Networking (CS215L)	3	MT 114 Elementary Probability and Statistics	3
CS 122 Introduction to Computer Programming	3	CS 222 Intro to Secure Scripting	3
CS 289 Cyber Defense I	2	Ge-Ed Oral Expression	3
MT 121 College Algebra or higher	3	CS 335 Computer and Systems Security	3
IS 311 Cybersecurity Pre-Internship (online)	1		
	<b>15</b>		<b>15</b>
<b>Sophomore Summer</b>			
CS 341 Internship I			<b>3</b>
<b>Junior Year</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
BS 101 Intro to Business	3	CS 310 Database Programming	3
CS 345 Principles of Cybersecurity	3	CS 350 Management of Cybersecurity	3
CS 375 Linux Operating Systems and Security	3	CS 370 Network Defense Countermeasures	3
CS 389 Cyber Defense II	2	CS 365 The 3 C's: Cybercrime, Cyberlaw, and Cyberethics	3
Gen-Ed Literature	3	Gen-Ed Humanities	3
	<b>14</b>		<b>15</b>
<i>Completion of the General Education competencies by the end of the junior year.</i>			
<b>Junior Summer</b>			
CS 441 Internship II			<b>3</b>
<b>Senior Year</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
CS 428 Penetration Testing	3	CS 448 Incident Response and Contingency Planning	3
Major Elective	3	IS 461 Seminar of Faith and Life	2
Gen-Ed Humanities	3	Gen-Ed Humanities	3
Gen-Ed Social Science	3	Physical Education Course	1
Business Elective	3	Major Elective	3
Physical Education Course	1	Major Elective	2
	<b>16</b>		<b>14</b>
<i>Completion of 27 credits at the 300-level or above.</i>			
Total hours required for degree:			<b>125</b>

## **Cybersecurity Minor**

### **Requirements for a Minor in Cybersecurity (18 credits)**

- CS 109 Introduction to Computer Hardware (3)
- CS 110 Introduction to Operating Systems (3)
- CS 215 Introduction to Computer Networking (3)
- CS 335 Computer and Systems Security (3)
- CS 345 Principles of Cybersecurity (3)
- CS 350 Management of Cybersecurity (3)