COMPUTER AND INFORMATION SECURITY, B.S.

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The Bachelor of Science in Computer and Information Security program prepares students for careers in computer and information security fields through a strong foundation in the theory and practice and the broad education gained by core curriculum. Computer and information security is an evolving discipline that involves the study of technology, strategy, policy, and standards regarding the security of and operations in cyberspace. The program introduces students to a variety of topics in computer and information security such as computer and network protection, penetration testing and prevention, security in mobile devices and Internet of Things (IoT), and more by using the state-of-the-art security tools and technologies.

Admission and Transfer Criteria

Minimum requirements for admission into the Computer Science major for first-time freshmen are

- an ACT composite score of 21 (SAT 1060) and
- an ACT mathematics score of 24 (SAT math section score of 570).

Minimum requirements for admission into the Computer and Information Security major for transfer students, whether from within Marshall University or from another institution, are:

- 15 earned semester credit hours of college-level coursework,
- an overall Grade Point Average of at least 2.0 in all college-level coursework,
- completion of ENG 101 Beginning Composition (or equivalent) with a grade of *C*, and
- completion of MTH 132 Precalculus with Sci Applica or MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica (or equivalent) with a minimum grade of *C*.

For those desiring to major in computer and information security who do not meet the admission or transfer criteria listed above:

- Students may be admitted to "Pre-Computer Science" with a minimum ACT composite of 19 and an ACT mathematics score of 19-23 (composite SAT of 990; Math SAT of 510-560). Transfer students must be eligible for MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.

Pre-Computer and Information Security students must complete the criteria for transfer students to Computer and Information Security. Registration for Computer Science courses will be limited until transfer criteria are met.

Course Requirements

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at https://www.marshall.edu/gened/.

Code	Title	Credit Hours
Core Curriculum		
Core 1: Critical Thinking		
FYS 100	First Yr Sem Critical Thinking	3
MTH 229	Calculus/Analytic Geom I (CT)	5
Critical Thinking Course		3
Core 2		
ENG 101	Beginning Composition	3
ENG 201	Advanced Composition	3
CMM 103	Fund Speech-Communication	3
MTH 229	Calculus/Analytic Geom I (CT)	5
BSC 120	Principles of Biology I	3
BSC 120L	Principles of Biology I Lab	1
Core II Humanities		3
Core II Social Science		3
Core II Fine Arts		3
Additional University Requirements		
Writing Intensive (ENG 354 recommended)		3
Writing Intensive		3
Multicultural or International		3
CYBR 490	Senior Project	3
Major-Specific		
MTH 220	Discrete Structures	3
MTH 229	Calculus/Analytic Geom I (CT)	5
STA 225	Introductory Statistics (CT)	3
Science: Any two courses with labs from the following science areas:		
BSC 120, Principles of Biology I, and BSC 120L, Principles of Biology I Lab, or above		
CHM 211, Principles of Chemistry I, and CHM 217, Principles of Chemistry I Lab, or above		
GLY 200, Physical Geology, and GLY 210L, Earth Materials Lab, or above		
PHY 201, College Physics I, and PHY 202, General Physics Laboratory, or above		
ENG 354	Scientific & Tech Writing	3
CS 105	Expl World with Computing (CT)	3
CS 110	Computer Science I	3
CS 120	Computer Science II	3
CS 210	Data Structures and Algorithms	3
CS 215	Adv Data Struct and Algorithms	3
CS 305	Software Engineering	3
CS 320	Internetworking	3
CS 330	Operating Systems	3

CS 402	Computer Architecture	3
CS 410	Database Engineering	3
CYBR 210	Comp and Info Sec Principle	3
CYBR 240	Information Security Policies	3
CYBR 310	Introduction to Cryptography	3
CYBR 330	Cyber Security	3
CYBR 350	Cyber System Administration	3
CYBR 360	Cyber Infrastructure Security	3
CYBR 400	Compter Security Design	3
CYBR 435	Cyber Risk	3
CYBR 442	Cyber Operations	3
CYBR 475	Internship	3
CYBR 490	Senior Project (C)	3
Free Elective		3
Free Elective		2
Computer and Information Security Elective		3
Select one of the following:		
CYBR 480	Special Topics	
CYBR 481	Special Topics	
CYBR 483	Special Topics	
CYBR 484	Special Topics	
CYBR 485	Special Topics	
CYBR 486	Independent Study	
CYBR 487	Independent Study	
CYBR 488	Independent Study	
CYBR 489	Independent Study	
Any 400-level Cs course except CS 430, CS 435		
Any 300- or 400-level CFS course		

Major Information

- Other science with lab courses may replace the courses listed above with the approval of the program chair.
- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- Coursework listed as “free elective” may vary for each student. Students are encouraged to use elective hours toward a minor or toward prerequisites.
- Course offerings and course attributes are subject to change each semester. Please consult each semester’s schedule of courses for availability and attributes.

Semester Plan

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

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First Year

First Semester		**Credit Hours**
CS 110	Computer Science I	3
MTH 229	Calculus/Analytic Geom I (CT)	5
ENG 101	Beginning Composition	3
FYS 100	First Yr Sem Critical Thinking	3
UNI 100	Freshman First Class	1
	Credit Hours	**15**
Second Semester		
CS 105	Expl World with Computing (CT)	3
CS 120	Computer Science II	3
ENG 201	Advanced Composition	3
MTH 220	Discrete Structures	3
CMM 103	Fund Speech-Communication	3
	Credit Hours	**15**

Second Year

First Semester		
Core II Fine Arts		3
CYBR 210	Comp and Info Sec Principle	3
STA 225	Introductory Statistics (CT)	3
CS 210	Data Structures and Algorithms	3
BSC 120	Principles of Biology I (w/ Lab)	3
BSC 120L	Principles of Biology I Lab	1
	Credit Hours	**16**
Second Semester		
Core II Humanities (CT, WI)		3
CYBR 240	Information Security Policies	3
CS 215	Adv Data Struct and Algorithms	3
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
Core II Social Science (MC/I, WI)		3
	Credit Hours	**17**

Third Year

First Semester		
ENG 354	Scientific & Tech Writing (WI)	3
CS 320	Internetworking	3
CS 330	Operating Systems	3
PHY 201	College Physics I	3
PHY 202	General Physics I Laboratory	1
	Credit Hours	**13**
Second Semester		
CYBR 310	Introduction to Cryptography	3
CYBR 330	Cyber Security	3
CS 410	Database Engineering	3
CYBR 360	Cyber Infrastructure Security	3
Free Elective		3

Free Elective		2
	Credit Hours	**17**
Fourth Year		
First Semester		
CS 305	Software Engineering	3
CYBR 400	Compter Security Design	3
CYBR 475	Internship	3
CYBR 350	Cyber System Administration	3
Free Elective		3
	Credit Hours	**15**
Second Semester		
CS 402	Computer Architecture	3
CYBR 490	Senior Project (C)	3
CYBR 435	Cyber Risk	3
CYBR 442	Cyber Operations	3
	Credit Hours	**12**
	Total Credit Hours	**120**