COMPUTER SCIENCE, B.S.

Dr. Wook-Sung Yoo, Chair

The Bachelor of Science in Computer Science program prepares students for careers in computer science through learning based on practice and grounded in theory. Students learn how to analyze, design, build, test, and deploy computer based systems by making technical trade offs between performance, scalability, availability, reliability, security, maintainability, cost and societal impact. Marshall's computing facilities are state-of-the-art and readily available to students.

Admission and Transfer Criteria

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

- an ACT composite score of 21 (composite SAT of 980) and
- an ACT mathematics score of 24 (Math SAT of 560).

Minimum requirements for admission into the Computer Science 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 grade of *C*.

Since enrollment may be limited, prospective students are encouraged to apply for admission as soon as possible and are urged to contact an advisor.

For those desiring to major in computer science 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 900; Math SAT of 460-550). Transfer students must be eligible for MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.

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

- 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.

Major

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
Sci w/Lab Core II Physical/Natural Science		4
Core II Humanities		3
Core II Social Studies		3
Core II Fine Arts		3
Additional Univeristy Requirements		
Writing Intensive		3
Writing Intensive		3
Multicultural or International		3
CS 490	Senior Project	3
Major-Specific		
MTH 220	Discrete Structures	3
MTH 229	Calculus/Analytic Geom I (CT)	5
MTH 230	Calculus/Analytic Geom II	4
MTH 329	Elementary Linear Algebra	3
STA 345	Applied Prob and Stat	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 300	Programming Languages	3
CS 305	Software Engineering	3
CS 310	Software Engineering II	3
CS 320	Internetworking	3
CS 330	Operating Systems	3
CS 360	Automata and Formal Languages	3
CS 402	Computer Architecture	3
CS 410	Database Engineering	3
CS 430	Cyber Security	3
CS 490	Senior Project	3
ENGR 221	Engineering Economy	3
ENG 354	Scientific & Tech Writing	3
MGT 320	Principles of Management	3
CS Electives		
Select two of the following:		6

CS 315	Software Quality Assurance	
CS 370	Computer Graphics	
CS 404	High Performance Computing	
CS 405	Computing for Bioinformatics	
CS 425	Computational Intelligence	
CS 435	Cyber Risk	
CS 440	Digital Image Processing	
CS 455	Systems Engineering	
CS 480	Special Topics	
CS 481	Special Topics	
CS 482	Special Topics	
CS 483	Special Topics	
Science w/ Lab		
Select three of the following with labs:		12
BSC 120	Principles of Biology (or above)	
CHM 211 & CHM 217	Principles of Chemistry I and Principles of Chem Lab I (or above)	
GLY 200 & GLY 210L	The Dynamic Earth and Earth Materials Lab (or above)	
PHY 201 & PHY 202	College Physics I and General Physics I Laboratory (or above)	
PHY 211 & PHY 202	University Physics I and General Physics I Laboratory (or above)	
Free Elective		3
Free Elective		3
Free Elective		2

Major Information

- 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 prerequisities.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.

- 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.

Four Year Plan

The Bachelor of Science in Computer Science program prepares students for careers in computer science through learning based on practice and grounded in theory. Students learn how to analyze, design, build, test, and deploy computer based systems by making technical trade offs between performance, scalability, availability, reliability, security, maintainability, cost and societal impact. Marshall's computing facilities are state-of-the-art and readily available to students.

Course	Title	Credit Hours
First Year		
First Semester		
CS 110	Computer Science I	3
MTH 229	Calculus/Analytic Geom I (CT)	5
ENG 101	Beginning Composition	3
CMM 103	Fund Speech-Communication	3
UNI 100	Freshman First Class	1
	Credit Hours	15
Second Semester		
CS 120	Computer Science II	3
ENG 201	Advanced Composition	3
FYS 100	First Yr Sem Critical Thinking	3
MTH 220	Discrete Structures	3
MTH 230	Calculus/Analytic Geom II	4
	Credit Hours	16
Second Year		
First Semester		
CS 210	Data Structures and Algorithms	3
ENG 354	Scientific & Tech Writing	3
MTH 329	Elementary Linear Algebra	3
Core II Physical/Natural Science		4
Core II Social Science (CT, M/I)		3
	Credit Hours	16
Second Semester		
CS 215	Adv Data Struct and Algorithms	3
CS 300	Programming Languages	3
STA 345	Applied Prob and Stat	3
Science w/ Lab		4
Core II Fine Arts		3
	Credit Hours	16
Third Year		
First Semester		
CS 305	Software Engineering	3
CS 320	Internetworking	3
CS 330	Operating Systems	3
MGT 320	Principles of Management	3
Core II Humanities (WI)		3
	Credit Hours	15
Second Semester		
CS 310	Software Engineering II	3
CS 402	Computer Architecture	3
CS 430	Cyber Security	3
CS 410	Database Engineering	3
ENGR 221	Engineering Economy	3
	Credit Hours	15
Fourth Year		
First Semester		
CS Elective		3
Science w/ Lab		4

CS 360	Automata and Formal Languages	3
Writing Intensive		3
	Credit Hours	13
Second Semester		
CS 490	Senior Project (C)	3
CS Elective		3
Free Elective		3
Free Elective		3
Free Elective		2
	Credit Hours	14
	Total Credit Hours	120