

COMPUTER SCIENCE MAJOR, BACHELOR OF SCIENCE (BS)

The Bachelor of Science degree in Computer Science is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202, 410.347.7700.

Our traditional computer science degree provides extensive preparation in both the theoretical and practical aspects of computer science. It will prepare you for a variety of careers in computing or for additional study at the graduate level. In this program you will study both general purpose programming and programming for specialized purposes and environments. In addition, you will learn about algorithms, performance analysis, networks, computer architectures, information systems and software engineering. You will also work on a realistic project in a team environment. The program includes a variety of advanced courses that allow you to tailor your degree to your specific interests.

Required Computer Science Courses

CSCD 210	PROGRAMMING PRINCIPLES I	5
CSCD 211	PROGRAMMING PRINCIPLES II	5
CSCD 240	C AND UNIX PROGRAMMING	5
CSCD 260	ARCHITECTURE AND ORGANIZATION	4
CSCD 300	DATA STRUCTURES	5
CSCD 320	ALGORITHMS	4
CSCD 327	RELATIONAL DATABASE SYSTEMS	4
CSCD 330	COMPUTER NETWORKS	4
CSCD 340	OPERATING SYSTEMS	5
CSCD 349	DESIGN PATTERNS	4
CSCD 350	SOFTWARE ENGINEERING	4
CSCD 488	SENIOR PROJECT	5
CSCD 490	SENIOR CAPSTONE	5

Choose one of the following 4

CSCD 370	GUI PROGRAMMING	
CSCD 371	.NET PROGRAMMING	
CSCD 372	ANDROID MOBILE DEVELOPMENT	
CSCD 373	iOS MOBILE DEVELOPMENT	

Choose one of the following

CSCD 378	WEB APPLICATION DEVELOPMENT	
or CSCD 379	.NET WEB APPLICATION DEVELOPMENT	

Required Advanced Coursework—choose two of the following 8

CSCD 409	SCIENTIFIC PROGRAMMING	
CSCD 420	AUTOMATA	
CSCD 427	ADVANCED DATABASE MANAGEMENT SYSTEMS	
CSCD 429	DATA MINING	
CSCD 433	ADVANCED COMPUTER NETWORKS	
CSCD 434	NETWORK SECURITY	
CSCD 437	SECURE CODING	
CSCD 440	ADVANCED OPERATING SYSTEMS	
CSCD 443	DISTRIBUTED MULTIPROCESSING	
CSCD 460	ADVANCED ARCHITECTURE AND ORGANIZATION	
CSCD 461	EMBEDDED SYSTEMS	
CSCD 462	EMBEDDED REAL-TIME CONTROL	
CSCD 467	PARALLEL AND CLOUD COMPUTING	

CSCD 470	3D COMPUTER GRAPHICS PRINCIPLES	
CSCD 471	ADVANCED 3D COMPUTER GRAPHICS	
CSCD 480	INTELLIGENT SYSTEMS	

Required Supporting Courses

EENG 160	DIGITAL CIRCUITS	4
MATH 161	CALCULUS I	5
MATH 162	CALCULUS II	5
MATH 231	LINEAR ALGEBRA	5
MATH 301	DISCRETE MATHEMATICS	5
MATH 380	ELEMENTARY PROBABILITY AND STATISTICS	5
PHIL 212	INTRODUCTORY ETHICS	5

Required Laboratory Science Courses, choose one sequences from the following 10-13

Biology		
BIOL 171	BIOLOGY I	
BIOL 172	BIOLOGY II	
BIOL 270	BIOLOGICAL INVESTIGATION	

Chemistry		
CHEM 151	GENERAL CHEMISTRY	
CHEM 152	GENERAL CHEMISTRY	

Geology		
GEOL 120	PHYSICAL GEOLOGY - THE SOLID EARTH	
GEOL 121	PHYSICAL GEOLOGY - SURFICIAL PROCESSES	

Physics		
PHYS 151	GENERAL PHYSICS I	
PHYS 152	GENERAL PHYSICS II	
And two of the following:		
PHYS 161	MECHANICS LABORATORY	
PHYS 162	HEAT AND OPTICS LABORATORY	
PHYS 163	INSTRUMENTATION LAB I	
PHYS 164	INSTRUMENTATION LAB II	

Natural Science Breadth—satisfies a natural science GEGR in a discipline other than that chosen for the sequence above. 5

Required Electives—choose at least one course from Group A and one required from Group B. 13

Note: many of these elective courses have prerequisites.

Note: other course with prior approval of the department required.

Group A		
CSCD 303	COMPUTER AND INFORMATION SECURITY	
CSCD 305	C++ PROGRAMMING	
CSCD 316	PRACTICAL PROBLEM SOLVING (must be taken twice to be used as elective credit)	
CSCD 370	GUI PROGRAMMING	
CSCD 371	.NET PROGRAMMING	
CSCD 372	ANDROID MOBILE DEVELOPMENT	
CSCD 373	iOS MOBILE DEVELOPMENT	
CSCD 378	WEB APPLICATION DEVELOPMENT	
CSCD 379	.NET WEB APPLICATION DEVELOPMENT	
CSCD 416	3D MODELING AND ANIMATION II	
CSCD 417	3D MODELING AND ANIMATION III	
CSCD 418	3D MODELING AND ANIMATION IV	
CSCD 435	PRINCIPLES OF PROGRAMMING LANGUAGE	
CSCD 474	COMPUTER GAMES DEVELOPMENT	

CSCD 487	HUMAN COMPUTER INTERFACE
CSCD 495	INTERNSHIP (up to two 4 credit internships are allowed)
CSCD 396	EXPERIMENTAL COURSE (prior departmental approval of topic content is required)
CSCD 398	SEMINAR (prior departmental approval of topic content is required)
CSCD 399	DIRECTED STUDY (prior departmental approval of topic content is required)
CSCD 439	TOPICS IN COMPUTER SCIENCE (prior departmental approval of topic content is required)
CSCD 496	EXPERIMENTAL COURSE (prior departmental approval of topic content is required)
CSCD 498	SEMINAR (prior departmental approval of topic content is required)
CSCD 499	DIRECTED STUDY (prior departmental approval of topic content is required)

CSCD 300-level course (prior departmental approval of topic content is required)

CSCD 400-level course (prior departmental approval is required)

Any course from the advanced coursework list not used to satisfy the advanced coursework requirement.

Group B

BIOL 173	BIOLOGY III
CHEM 153	GENERAL CHEMISTRY
GEOL 122	HISTORICAL GEOLOGY
MATH 163	CALCULUS III
MATH 241	CALCULUS IV
MATH 370	SURVEY OF GEOMETRIES
MATH 401	ADVANCED FORMAL LOGIC
PHIL 301	INTRODUCTION TO FORMAL LOGIC
PHYS 153 & PHYS 161	GENERAL PHYSICS III and MECHANICS LABORATORY (requires one of the following labs not previously taken)
or PHYS 162	HEAT AND OPTICS LABORATORY
or PHYS 163	INSTRUMENTATION LAB I
or PHYS 164	INSTRUMENTATION LAB II

Total Credits 133-136

For information on General Education, see Undergraduate Degree (<http://catalog.ewu.edu/archives/2015-2016/undergraduate-degree>) .

Student Learning Outcomes—students will

Student Learning Outcomes for the BS in Computer Science may be found at www.ewu.edu/csslo (<http://www.ewu.edu/csslo>)