

B.S. in Software Engineering

Worldwide Program Requirements

General Education Requirements	43
Core Requirements	62
Program Support Courses	16
Total Credits	121

Program Details

The Bachelor of Science in Software Engineering requires successful completion of a minimum of 121 credit hours. Students enrolled in the Worldwide Undergraduate Online program may complete the degree in 20 terms, or approximately four years, assuming full-time enrollment and continuous progress. Students pursuing this undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all work completed at the University. The courses required to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students are responsible for ensuring that all prerequisite and degree requirements are satisfied prior to enrollment in advanced coursework. The suggested plan of study is provided as a guide. A student's actual plan of study may vary based on term of admission, course availability, transfer credit, and other academic considerations. Students should consult with their academic advisor to develop an individualized plan of study.

The curriculum provides a comprehensive foundation in software engineering, computer science, computer engineering, and mathematics, culminating in a two-course software engineering capstone experience. Students should work closely with their academic advisor to ensure prerequisite requirements are met and courses are completed in the recommended sequence.

General Education Requirements

Communication	9
COMM 122 English Composition	
COMM 219 Speech	
COMM 221 Technical Communication	
Humanities - Lower Level	3
Social Sciences - Lower Level	3
Humanities/Social Sciences - Lower or Upper Level	3
Humanities - Upper Level	3
Computer Science/Information Technology	3
CPSC 223 Scientific Programming in C	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	11
PHYS 150 Physics with Calculus I	
PHYS 160 Physics with Calculus II	
PHYS 250 Physics with Calculus III	
PHYS 250W Physics with Calculus III Laboratory	
Total Credits	43

Core Requirements

CESC 220	Digital Circuit Design	3
CESC 220L	Digital Circuit Design Laboratory	1
CESC 320	Microprocessor Systems	3
CESC 320L	Microprocessor Systems Laboratory	1

CESC 450	Real-Time Embedded Systems	3
CESC 470	Computer Architecture	3
CPSC 222	Introduction to Discrete Structures	3
CPSC 315	Data Structures and Analysis of Algorithms	3
CPSC 317	Files and Database Systems	3
CPSC 332	Organization of Programming Languages	3
CPSC 362	Computing Theory	3
CPSC 420	Operating Systems	3
CPSC 432	Information and Computer Security	3
MATH 412	Probability and Statistics	3
SFTW 300	Software Engineering Practices	3
SFTW 310	Analysis and Design of Software Systems	3
SFTW 320	Software Construction	3
SFTW 420	Software Quality Assurance	3
SFTW 450	Software Team Project I	3
SFTW 451	Software Team Project II	3
MATH 300/400 Elective		3
CESC/CPSC/ELEC/SFTW Upper Level Elective		3
Total Credits		62

Program Support Courses

ENGR 101W	Introduction to Engineering	3
CPSC 225	Computer Science II	3
CPSC 225L	Computer Science II Laboratory	1
CESC 300	Computing in Aerospace and Aviation	3
CPSC 335	Introduction to Computer Graphics	3
SFTW 410	Software Modeling	3
Total Credits		16

Suggested Plan of Study

Year One

Requirements	Credits
ENGR 101W - Introduction to Engineering	3
CPSC 222 - Introduction to Discrete Structures	3
CPSC 223 - Scientific Programming in C	3
Semester Hours	9

Requirements	Credits
CPSC 225 - Computer Science II	3
CPSC 225L - Computer Science II Laboratory	1
MATH 241 - Calculus and Analytical Geometry I	4
Semester Hours	8

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
COMM 122 - English Composition	3
PHYS 150 - Physics with Calculus I	3
Semester Hours	10

Requirements	Credits
COMM 219 - Speech	3
PHYS 160 - Physics with Calculus II	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
PHYS 250 - Physics with Calculus III	3
PHYS 250W - Physics with Calculus III Laboratory	2
SFTW 300 - Software Engineering Practices	3
Semester Hours	8

Requirements	Credits
CESC 220 - Digital Circuit Design	3
CESC 220L - Digital Circuit Design Laboratory	1
MATH 412 - Probability and Statistics	3
Semester Hours	7

Requirements	Credits
CESC 320 - Microprocessor Systems	3
CESC 320L - Microprocessor Systems Laboratory	1
Upper Level MATH Elective (MATH 392)	3
Semester Hours	7

Requirements	Credits
COMM 221 - Technical Communication	3
Social Sciences - Lower Level	3
Humanities - Lower Level	3
Semester Hours	9

Total Credits

Total Hours for All Requirements: 31

Year Three

Requirements	Credits
CPSC 315 - Data Structures and Analysis of Algorithms	3
CPSC 362 - Computing Theory	3
CPSC 317 - Files and Database Systems	3
Semester Hours	9

Requirements	Credits
CPSC 332 - Organization of Programming Languages	3
SFTW 310 - Analysis and Design of Software Systems	3
CPSC 420 - Operating Systems	3
Semester Hours	9

Requirements	Credits
CESC 470 - Computer Architecture	3
SFTW 320 - Software Construction	3
Semester Hours	6

Requirements	Credits
CESC 300 - Computing in Aerospace and Aviation	3
Humanities - Upper Level	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
CPSC 432 - Information and Computer Security	3
CESC 450 - Real-Time Embedded Systems	3
SFTW 420 - Software Quality Assurance	3
Semester Hours	9

Requirements	Credits
CPSC 335 - Introduction to Computer Graphics	3
SFTW 410 - Software Modeling	3
CESC/CPSC/ELEC/SFTW Upper Level Elective (CPSC 462)	3
Semester Hours	9

Requirements	Credits
SFTW 450 - Software Team Project I	3
Semester Hours	3

Requirements	Credits
SFTW 451 - Software Team Project II	3
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 27

Estimated Cost of AttendanceEstimated Cost of Attendance: California Student Information (<https://catalog.erau.edu/student-life/student-affairs/california-student/>)