

B.S. in Engineering

Worldwide Program Requirements

General Education Requirements	38
Core Requirements	85
Total Credits	123

Program Details

The Bachelor of Science in Engineering requires successful completion of a minimum of 123 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 includes a comprehensive sequence of coursework in engineering, engineering science, aeronautical engineering, electrical engineering, computer engineering, mechanical engineering, mathematics, and physical sciences, culminating in a two-course capstone design 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

Embry-Riddle courses in the general education categories of Communication, Humanities, Social Sciences, Physical/Life Sciences, Mathematics, and Computer Science/Information Technology are given in the list below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified.

Communication	9
COMM 122 English Composition	
COMM 219 Speech	
COMM 221 Technical Communication	
Humanities - Lower Level	3
Social Sciences - Lower Level	3
ECON 225 Engineering Economics	
Humanities - Upper Level	3
Social Sciences - Upper Level	3
Computer Science/Information Technology	3
ENGR 115 Introduction to Computing for Engineers	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	6
PHYS 150 Physics with Calculus I	
PHYS 160 Physics with Calculus II	
Total Credits	38

Core Requirements

Aeronautical Engineering		
AERO 309	Aerodynamic Performance of Flight Vehicles	3
ENGR 350	Engineering Project Management	3
Engineering		
ENGR 101W	Introduction to Engineering	3
ENGR 120	Graphical Communications	3
ENGR 330	Systems and Signal Processing	3
ENGR 330L	Systems and Signal Processing Laboratory	1
ENGR 400	Fundamentals of Energy Systems	3
ENGR 450	Systems and Controls	3
Engineering Science		
ESCI 201	Statics	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
ESCI 326	Engineering Materials and Structures	3
Computer Engineering		
CESC 220	Digital Circuit Design	3
CESC 220L	Digital Circuit Design Laboratory	1
Electrical Engineering		
ELEC 220	Circuits	3
ELEC 220L	Circuits Laboratory	1
ELEC 230	Electronics	3
ELEC 230L	Electronics Laboratory	1
Physical Science		
PHYS 250	Physics with Calculus III	3
PHYS 250W	Physics with Calculus III Laboratory	2
ESCI 206	Fluid Mechanics	3
ESCI 208	Thermodynamics	3
Mechanical Engineering		
MECH 370	Introduction to Robotics	3
MECH 370L	Introduction to Robotics I Laboratory	1
ESCI 324	Measurements and Instrumentation	2
ESCI 324L	Measurements and Instrumentation Laboratory	1
MECH 470	Mechatronics	3
MECH 470L	Mechatronics Laboratory	1
Mathematics		
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
MATH 412	Probability and Statistics	3
Capstone		
ENGR 490	Capstone Design Project I	3
ENGR 491	Capstone Design Project II	3
Total Credits		85

Suggested Plan of Study

Year One

Requirements	Credits
ENGR 101W - Introduction to Engineering	3
COMM 122 - English Composition	3
Semester Hours	6

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 115 - Introduction to Computing for Engineers	3

Humanities - Lower Level	3
Semester Hours	10
Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
PHYS 150 - Physics with Calculus I	3
Semester Hours	7
Requirements	Credits
PHYS 160 - Physics with Calculus II	3
COMM 219 - Speech	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 29

Year Two

Requirements	Credits
ENGR 120 - Graphical Communications	3
MATH 243 - Calculus and Analytical Geometry III	4
COMM 221 - Technical Communication	3
Semester Hours	10
Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
ESCI 201 - Statics	3
Semester Hours	7
Requirements	Credits
ESCI 202 - Solid Mechanics	3
ESCI 206 - Fluid Mechanics	3
ECON 225 - Engineering Economics	3
Semester Hours	9
Requirements	Credits
ESCI 204 - Dynamics	3
PHYS 250 - Physics with Calculus III	3
PHYS 250W - Physics with Calculus III Laboratory	2
Semester Hours	8

Total Credits

Total Hours for All Requirements: 34

Year Three

Requirements	Credits
ESCI 208 - Thermodynamics	3
ELEC 220 - Circuits	3
ELEC 220L - Circuits Laboratory	1
Semester Hours	7
Requirements	Credits
ELEC 230 - Electronics	3
ELEC 230L - Electronics Laboratory	1
CESC 220 - Digital Circuit Design	3

CESC 220L - Digital Circuit Design Laboratory	1
Semester Hours	8
Requirements	Credits
MECH 370 - Introduction to Robotics	3
MECH 370L - Introduction to Robotics I Laboratory	1
ESCI 324 - Measurements and Instrumentation	2
ESCI 324L - Measurements and Instrumentation Laboratory	1
Semester Hours	7

Requirements	Credits
AERO 309 - Aerodynamic Performance of Flight Vehicles	3
ESCI 326 - Engineering Materials and Structures	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 28

Year Four

Requirements	Credits
ENGR 330 - Systems and Signal Processing	3
ENGR 330L - Systems and Signal Processing Laboratory	1
MECH 470 - Mechatronics	3
MECH 470L - Mechatronics Laboratory	1
Semester Hours	8
Requirements	Credits
ENGR 450 - Systems and Controls	3
MATH 412 - Probability and Statistics	3
ENGR 350 - Engineering Project Management	3
Semester Hours	9
Requirements	Credits
ENGR 490 - Capstone Design Project I	3
Humanities - Upper Level	3
ENGR 400 - Fundamentals of Energy Systems	3
Semester Hours	9
Requirements	Credits
ENGR 491 - Capstone Design Project II	3
Social Sciences - Upper Level	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 32

Estimated Cost of Attendance

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