

B.S. in Systems Engineering

General Education Requirements

For a full description of Embry-Riddle General Education guidelines, please see the General Education section of this catalog. These minimum requirements are applicable to all degree programs.

Communication Theory & Skills (COM 122, COM 219, COM 221)	9
Lower-Level Humanities	3
Lower-Level Social Sciences (PSY 101)	3
Lower or Upper-Level Humanities or Social Sciences	3
Upper-Level Humanities or Social Sciences	3
Computer Science *	3
Mathematics (MA 241 & MA 242)	8
Physical and Life Sciences (PS 150, PS 160, PS 226L)	7
Total Credits	39

* Computer Science required course: Aerospace Systems Engineering AOC must take EGR 115; Enterprise Systems Engineering AOC must take CS 223.

Systems Engineering Core Requirements

UNIV 101	College Success	1
MA 243	Calculus and Analytical Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
MA 412	Probability and Statistics	3
EGR 101	Introduction to Engineering ³	2
ES 201	Statics	3
ES 204	Dynamics	3
HF 300	Human Factors I: Principles and Fundamentals	3
HF 312	Ergonomics and Bioengineering	3
Technical Elective (Science + Lab) ¹		4
Technical Elective ²		3

Systems Engineering Courses

SYS 301	Introduction to Systems Engineering	3
SYS 302	System Engineering Design Considerations	3
SYS 303	Optimization in Systems Engineering	3
SYS 304	Trade Studies, Risk and Decision Analysis	3
SYS 401	Systems Modeling and Simulation	3
SYS 402	Optimization in Systems Engineering II	3
SYS 403	Systems Engineering Life Cycle Costing	3
SYS 415	Systems Engineering Practices: Specialty Engineering	3
SYS 417	Systems Engineering Capstone Project I	3
SYS 418	Systems Engineering Capstone Project II	3
Total Credits		63

Aerospace Systems Engineering Area of Concentration

AE 201	Aerospace Flight Vehicles	3
AE Courses (Pick one of the following)		3
AE 313	Space Mechanics	
AE 319	Aerodynamics	
AE 323	Spacecraft Systems	
EGR 120	Graphical Communications	3

EE 311	Robotics Technologies for Unmanned Systems	3
EE 327	Electrical Engineering Fundamentals	3
EE 328	Electrical Engineering Fundamentals Laboratory	1
EE 401	Control Systems Analysis and Design	3
EE 402	Control Systems Laboratory	1
ES 305	Thermodynamics	3
Total Credits		23

Enterprise Systems Engineering Area of Concentration

CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
Systems Engineering Technical Electives (Pick four of the following)		12
SYS 310	Systems Architecture, Modeling and Simulation	
SYS 320	Systems Engineering Practices	
SYS 405	Aerospace Systems Guidance and Control	
SYS 410	Space Systems and Mission Analysis	
SYS 425	System Quality Engineering	
SYS 460	Systems Engineering Management	
Technical Elective ²		3
Total Credits		23

Total Degree Credits 125

¹ Technical Elective (Science): Science course with a lab (4 credits). Examples: BIO 120 and BIO 120L / CHM 110 and CHM 110L / PS 228 and PS 228L / PS 250 and PS 253

² Technical Elective: CEC/CS/EE/SE/SYS/ME/AE/CE Upper-Level Elective (3 credits)

³ Aerospace Systems Engineering AOC students are required to enroll in the Aerospace Engineering Topic of EGR 101; Enterprise Systems Engineering AOC students are required to enroll in the EECS Engineering Topic of EGR 101.