

# B.S. in Electrical Engineering

## Degree Requirements

The Bachelor of Science in Electrical Engineering requires the successful completion of a minimum of 125 credit hours. Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. The B.S. degree requires a minimum cumulative grade point average of 2.00 in all EE, ES, CEC, EGR, and CS courses that fulfill any degree requirement.

The Electrical Engineering degree includes a space option in which EP 394, AE 427, and AE 445 will be taken for the ES elective, EE 420, and EE 421.

Students who are interested in robotics may take a robotics track within the EE program. The suggested program of study follows the regular EE degree plan.

Electrical engineering majors are required to have a grade of C or better in all prerequisite courses for courses with the CS, CEC, EE, EGR, ES, or SE prefixes specifically listed in the catalog as required for the major.

## Program Requirements

### General Education

Embry-Riddle degree programs require students to complete a minimum of 36 hours of General Education coursework. For a full description of Embry-Riddle General Education guidelines, please see the General Education section of this catalog.

Students may choose other classes outside of their requirements, but doing so can result in the student having to complete more than the degree's 125-126 credit hours. This will result in additional **time and cost** to the student.

Communication Theory and Skills	9
Computer Science/Information Technology	3
Mathematics	6
Physical and Life Sciences (Natural Sciences)	6
Humanities and Social Sciences	12
3 hours of lower-level Humanities	
3 hours of lower-level Social Science	
3 hours of lower-level or upper-level Humanities or Social Science	
3 hours of upper-level Humanities or Social Science	

**Total Credits** **36**

### Electrical Engineering Core (110 Credits)

The following course of study outlines the quickest and most cost-efficient route for students to earn their B.S. in Electrical Engineering. Students are encouraged to follow the course of study to ensure they complete all program required courses and their prerequisites within four years.

Courses in the core with a # will satisfy general education requirements.

CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
COM 122	English Composition #	3
COM 219	Speech #	3
COM 221	Technical Report Writing (Must earn a C or better to pass COM 221) #	3
CS 125	Computer Science I #	4

EC 225	Engineering Economics #	3
EE 223	Linear Circuits Analysis I **	3
EE 224	Electrical Engineering Laboratory I **	1
EE 302	Electronic Devices and Circuits	3
EE 304	Electronic Circuits Laboratory *	1
EE 314	Signal and Linear System Analysis *	3
EE 315	Signal and Linear System Analysis Laboratory *	1
EE 340	Electric and Magnetic Fields **	3
EE 401	Control Systems Analysis and Design **	3
EE 402	Control Systems Laboratory **	1
EE 410	Communication Systems *	3
EE 412	Communication Systems Laboratory *	1
EE 420	Electrical Engineering Capstone I **	3
EE 421	Electrical Engineering Capstone II **	3
EE 450	Elements of Power Systems *	3
EE 452	Power Systems Laboratory *	1
EGR 101	Introduction to Engineering	2
EGR 115	Introduction to Computing for Engineers	3
ES 207	Fundamentals of Mechanics *	3
ES 312	Energy Transfer Fundamentals	3
ES Core Selection (See course list below)		3
General Education - lower-level or upper-level Humanities or Social Science #		3
General Education - lower-level Humanities #		3
HU 330	Values and Ethics #	3
or HU 335	Technology and Modern Civilization	
MA 241	Calculus and Analytical Geometry I #	4
MA 242	Calculus and Analytical Geometry II #	4
MA 243	Calculus and Analytical Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
MA 412	Probability and Statistics	3
MA 441	Mathematical Methods for Engineering and Physics I	3
PS 161	Physics I & II for Engineers #	4
PS 250	Physics for Engineers III #	3
PS 253	Physics Laboratory for Engineers #	1

### Advanced Electives (6-7 Credits)

Advanced Electives / EE 4XX (selected from a list provided by the department chair) 6-7

### Technical Electives (9 Credits)

Technical Electives 9

Technical electives include EGR 200, EGR 201, CS 225, SIS 365, and any AE, CEC, CEXX (Coop/Internship), CS, EE, EP, ES, MA, ME, PS, SE, or SYS course 300 level or above. Other courses may be approved by the CESE Department Chair.

ROTC Exceptions must be approved by the CESE Department Chair.

**Total Credits** **125-126**

### ES Core Selection (3 Credits)

EGR 200	Computer Aided Design of Aerospace Systems	3
EGR 201	Computer Aided Design of Mechanical Systems	3
EGR 402	Application of Advanced CATIA Methods	3
EP 394	Space Systems Engineering	3
ES 206	Fluid Mechanics	3
ES 306	Fiber Optics	3
ES 315	Space Environment and Effects	3

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ES 320 & ES 321	Engineering Materials Science and Engineering Materials Science Laboratory	3
ES 322 & ES 323	Aerospace Engineering Failure and Aerospace Engineering Failure Laboratory	3
ES 324 & ES 325	Measurements and Instrumentation and Measurements and Instrumentation Lab	3
ES 412	Structural Dynamics	3

Other courses may be approved by the CESE Department Chair -  
Example: Directed Study

### Robotics Option

#### Electrical Engineering Core (122 Credits)

CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
COM 122	English Composition #	3
COM 221	Technical Report Writing #	3
COM 420	Advanced Technical Communication I #	1
COM 430	Advanced Technical Communication II #	2
CS 125	Computer Science I #	4
EC 225	Engineering Economics #	3
EE 223	Linear Circuits Analysis I **	3
EE 224	Electrical Engineering Laboratory I **	1
EE 302	Electronic Devices and Circuits *	3
EE 304	Electronic Circuits Laboratory *	1
EE 314	Signal and Linear System Analysis *	3
EE 315	Signal and Linear System Analysis Laboratory	1
EE 340	Electric and Magnetic Fields **	3
EE 401	Control Systems Analysis and Design **	3
EE 402	Control Systems Laboratory **	1
EE 410	Communication Systems *	3
EE 412	Communication Systems Laboratory *	1
EE 450	Elements of Power Systems *	3
EE 452	Power Systems Laboratory *	1
EGR 101	Introduction to Engineering	2
EGR 115	Introduction to Computing for Engineers	3
ES 204	Dynamics	3
ES 207	Fundamentals of Mechanics *	3
ES 312	Energy Transfer Fundamentals **	3
General Education - lower-level or upper-level Humanities or Social Science #		3
General Education - lower-level Humanities #		3
HU 330 or HU 335	Values and Ethics # Technology and Modern Civilization	3
MA 241	Calculus and Analytical Geometry I #	4
MA 242	Calculus and Analytical Geometry II #	4
MA 243	Calculus and Analytical Geometry III	4
MA 335	Introduction to Linear and Abstract Algebra	3
MA 345	Differential Equations and Matrix Methods	4
MA 412	Probability and Statistics	3
MA 441	Mathematical Methods for Engineering and Physics I	3
ME 302	Introduction to Robotics I *	3
ME 406	Robotics II **	3
ME 406L	Robotics II Laboratory **	1
ME 407	Preliminary Design for Robotic Systems with Laboratory *	4
ME 420	Detail Design of Robotic Systems with Laboratory	4

PS 161	Physics I & II for Engineers #	4
PS 250	Physics for Engineers III #	3
PS 253	Physics Laboratory for Engineers #	1

#### Advanced Electives (3-4 Credits)

Advanced Electives (selected from a list provided by the department chair)	3-4
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<b>Total Credits</b>	<b>125-126</b>
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\* Offered in Fall Only

\*\* Offered in Spring Only

# General Education Course

UNIV 101 is taken in excess of degree requirements.

All Army ROTC students are required to complete SS 321 - U.S. Military  
History 1900-Present (3 credits) in order to commission.