BS AEROSPACE ENGINEERING

Program Learning Outcomes

ABET-Defined Learning Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

3. An ability to communicate effectively with a range of audiences

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Degree Requirements and Curriculum

In addition to the program requirements listed on this page, students must also satisfy requirements outlined in more detail in the Minimum Requirements for Graduation (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext) section of this catalog, including:

- 60 units of upper division courses
- 2.0 GPA
- Graduation Writing Requirement (GWR)
- U.S. Cultural Pluralism (USCP)

Note: No major, support or concentration courses may be selected as credit/no credit.

MAJOR COURSES		
AERO 121	Aerospace Fundamentals	2
AERO 215	Introduction to Aerospace Design	2
AERO 220	Aerospace Systems Engineering and Integration	1
AERO 299	Aerospace Thermodynamics	4
AERO 300	Aerospace Engineering Analysis	5
AERO 302	Aerospace Fluid Mechanics	4
AERO 303	Aerospace Gas Dynamics and Heat Transfer	4
AERO 320	Fundamentals of Dynamics and Control	4
AERO 321	Experimental Sensors, Actuators and Control	1
AERO 331	Aerospace Structural Analysis I	4
AERO 350	Fundamentals of Systems Engineering	2
AERO 431	Aerospace Structural Analysis II	4
AERO 433	Experimental Stress Analysis	1
AERO 460	Aerospace Engineering Professional Preparation	1
AERO 465	Aerospace Systems Senior Laboratory	1
CE 204 & CE 207	Mechanics of Materials I and Mechanics of Materials II	5
or CE 208	Mechanics of Materials	
EE 201 & EE 251	Electric Circuit Theory and Electric Circuits Laboratory	4
Concentration Courses [1]		40
SUPPORT COURSES		
BIO 213	Life Science for Engineers (B2) [2]	2
BMED/BRAE 213	Bioengineering Fundamentals	2
CHEM 124	General Chemistry for Physical Science and Engineering I (B3/B4) [2]	4
ENGL 149	Technical Writing for Engineers (A3) [2]	4
IME 144	Introduction to Design and Manufacturing	4
MATE 210	Materials Engineering	3
MATH 141	Calculus I (B1) [2]	4
MATH 142	Calculus II (B1) [2]	4
MATH 143	Calculus III (Add'l Area B) [2]	4
MATH 241	Calculus IV	4
MATH 244	Linear Analysis I	4
ME 211	Engineering Statics	3
ME 212	Engineering Dynamics	3
PHYS 132	General Physics II	4
PHYS 133	General Physics III	4
PHYS 141	General Physics IA (Add'l Area B) [2]	4
STAT 312	Statistical Methods for Engineers (B6) [2]	4
GENERAL EDUCATION (GE)		
(See GE program requirements below.)		40
FREE ELECTIVES		
Free Electives		0
Total units		190

[1] See Concentrations below

[2] Required in Support; also satisfies GE

Concentrations (select one)

- Aeronautics (http://catalog.calpoly.edu/collegesandprograms/collegeofengineering/aerospaceengineering/bsaerospaceengineering/aeronauticsconcentration)
- Astronautics (http://catalog.calpoly.edu/collegesandprograms/collegeofengineering/aerospaceengineering/bsaerospaceengineering/astronauticsconcentration)

General Education (GE) Requirements

- 72 units required, 32 of which are specified in Major and/or Support.
- See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
- Minimum of 8 units required at the 300 level.

Area A	**Communication**	
A1	Expository Writing	4
A2	Oral Communication	4
A3	Reasoning, Argumentation and Writing (4 units in Support) [1]	0
Area B	**Math, Science, and Quantitative Reasoning**	
B1	Mathematics/Statistics (8 units in Support) [1]	0
B2	Life Science (4 units in Support) [1]	0
B3	Physical Science (4 units in Support) [1]	0
B4	One lab taken with either a B2 or B3 course	
B6	Upper-division Area B (4 units in Support) [1]	0
Additional Area B units (8 units in Support) [1]		0
Area C	**Arts and Humanities**	
C1	Literature	4
C2	Philosophy	4
C3	Fine/Performing Arts	4
C4	Upper-division elective	4
Area D	**Society and the Individual**	
D1	The American Experience (Title 5, Section 40404 requirement)	4
D2	Political Economy	4
D3	Comparative Social Institutions	4
Area E	**Lifelong Learning and Self-Development**	
E	Lower-division elective	4
Total units		40

[1] Required in Support; also satisfies GE