AEROSPACE ENGINEERING, BS

The successful Aerospace Engineering student and professional is skilled in mathematics, physics, and computer programming and usage.

Accreditation

Information can be found on Department website.

Students earning the Bachelor of Science in Aerospace Engineering (BS) degree must complete all University, College and departmental degree requirements for a total of 126 credits. These include General Education requirements and the following major requirements and ancillary requirements. Additional information, including a semester-by-semester flowchart of degree requirements, can be found on the departmental website. Students completing the Bachelor of Science in Aerospace Engineering (BS) degree must comply with all College of Engineering academic policies and requirements.

Major and Ancillary Requirements		Hours
Major Courses		
ENGR 101	The World of Engineering	1
ENGR 104	Fundamentals of Engineering	3
ENGR 161 or	Small-Scale Eng. Graphics (ENGR 161 is preferred for the AEM major.)	1
ENGR 171	Large-Scale Eng. Graphics	
AEM 121	Intr. to Aerospace Eng.	1
AEM 201	Statics	3
AEM 249 or	Algorithm Devl Implementation	3
CS 100 or	CS I for Majors	
CS 110	Honors CS I for Majors	
(RRS 101 and RRS 102 together can also fill this requirement)		
AEM 250	Mechanics Of Materials I	3
AEM 251	Mechanics Of Materials I Lab	1
AEM 264	Dynamics	3
AEM 311	Fluid Mechanics	3
AEM 313	Aerodynamics	3
AEM 341	Aerospace Structures	3
AEM 351	Aerospace Structures Lab	1
AEM 368	Flight Mechanics	3
AEM 395	Prof Dev in AE	3
AEM 402	Integrated Aerospace Design I	3
AEM 404	Integrated Aerospace Design II	3
AEM 408	Propulsion Systems	3
AEM 413	Compressible Flow	3
AEM 468	Flight Dynamics & Control	3
ME 215	Thermodynamics I	3
ME 349	Engineering Analysis	3
Aerospace Engineering Elective (see table for course options)		9
Aerospace Engineering STEM Elective (see table for course options)		9
	Credit Hours Subtotal:	74
Ancillary Courses		
CH 101 or	General Chemistry	4
CH 117	Honors General Chemistry	
MATH 125 or	Calculus I	4
MATH 145	Honors Calculus I	
MATH 126 or	Calculus II	4
MATH 146	Honors Calculus II	
MATH 227 or	Calculus III	4
MATH 247	Honors Calculus III	
MATH 237	Introduction to Linear Algebra	3
MATH 238	Appld Diff Equations I	3
PH 105 or	General Physics W/Calc I	4
PH 125	Honors Gen Ph W/Calculus	
PH 106 or	General Physics W/Calc II	4
PH 126	Honors Gen Ph W/Calculus II	
	Credit Hours Subtotal:	30
General Education Courses		

The specific courses each student completes in order to fulfill the University of Alabama's general education requirements will depend upon the particular degree program in which the student is enrolled. To determine how these general education requirements are integrated into your program of study, review your semester-by-semester flowchart and discuss with your academic advisor.

Aerospace Engineering (AEM) Elective

The Aerospace Engineering (AEM) Elective requires a minimum of nine credits from the following list of courses. The Department of Aerospace Engineering and Mechanics also offers elective courses on special topics organized by individual faculty advisors. These courses may be an option upon approval by the department and College. Students admitted to the Accelerated Master's Program (AMP) or other applicable programs may enroll in the 500-level versions of the courses available in the table or AEM 600-689 courses.

Aerospace Engineering (AEM) Electives		Hours
AEM 360	Astronautics	3
AEM 414	Experimental Aerodynamics	3
AEM 416	Helicopter Theory	3
AEM 418	Uncrewed Aircraft Systems	3
AEM 420	Computational Fluid Dynamics	3
AEM 425	Spacecraft Dynamics & Control	3
AEM 428	Space Propulsion	3
AEM 446	Intermediate Solid Mechanics	3
AEM 448	Stochastic Mechanics	3
AEM 451	Aircraft Structural Design	3
AEM 452	Composite Materials	3
AEM 453	Multiscale Adv. Composites	3
AEM 455	Nondestructive Evaluation	3
AEM 461	Computation Method Aero Struct	3
AEM 469	Orbital Mechanics	3
AEM 470	Mechanical Vibrations	3
AEM 474	Structural Dynamics	3
AEM 475	Fundamentals of Aeroelasticity	3
AEM 482	Space Systems	3
AEM 484	Space Environment	3

AEM 488	Adv. Space Propulsion & Power	3
AEM 489	Space Law	3

Aerospace Engineering (AEM) STEM Elective

The Aerospace Engineering (AEM) STEM Elective requires a minimum of nine credits from the following list of courses. Students admitted to the Accelerated Master's Program (AMP) or other applicable programs may enroll in 500 to 589 or 600 to 689 level College of Engineering courses.

Aerospace Engineering (AEM) STEM Electives		Hours
MTE 271	Engr Matls: Struc Prop	3
PH 301	Mechanics I	3
PH 302	Intermediate Mechanics	3
PH 451	Machine Learning	3
ST 450 or	Stat Methods in Research I	3
GES 400	Engineering Statistics	
ST 451	Stat Methods in Research II	3
Any course listed as an Aerospace Engineering (AEM) Elective not completing other Major and Ancillary requirements.		
Any College of Engineering 300 to 489 three-credit hour course (except 397 level) not completing other Major and Ancillary requirements.		

A BSAE degree is an entry-level requirement for various careers such as design, development, testing, and research in both the public and private aerospace industries. This degree also provides an excellent background for students wishing to attend graduate school in other areas of engineering, sciences, medicine, law, or business. The program has successful graduates in all of these areas.

Types of Jobs Accepted

Aerospace Engineer, Structural Design Engineer, Flight Test Engineer, Graduate Research Assistant, GNC Engineer, System Engineer.

Jobs of Experienced Alumni

Senior Analyst, Director of Aviation and Missile Research, Systems Engineer, Chief Scientist, Senior Engineer.

Learn more about opportunities in this field at the Career Center