BS in Aerospace Engineering

Program Requirements

The undergraduate program requires the completion of 129 credit hours for graduation, and includes 30 credit hours of mathematics and natural sciences and 72 credit hours of major courses. In addition to meeting the requirements of the WSU General Education Program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/) and the requirements of the College of Engineering, students majoring in aerospace engineering must take the following courses:

Course	Title	Hours
General Education (34-35 credit hours)		
Select courses to meet General Education requirements [4]		21
General Education courses that will also meet Program Requirements		
PHIL 385	Engineering Ethics [1]	3
ECON 201	Principles of Macroeconomics [1,5]	3
PHYS 313	Physics for Scientists I [1]	4
PHYS 315	University Physics Lab I [1]	1
MATH 242	Calculus I [1]	5
Mathematics/Natural Sciences		
MATH 243	Calculus II [1]	5
MATH 344	Calculus III [1]	3
MATH 555	Differential Equations I	3
PHYS 314	Physics for Scientists II [1]	4
CHEM 211	General Chemistry I [1]	5
Major Courses		
AE 223	Statics	3
ECE 282	Circuits I	4
ME 398	Thermodynamics I	3
AE 227	Engineering Digital Computation	3
IME 222	Engineering Graphics [3]	2
IME 222L	Graphics Lab [3]	1
ME 250	Materials Engineering	3
AE 324	Fundamentals of Atmospheric Flight	3
AE 333	Mechanics of Materials	3
AE 373	Dynamics	3
AE 415	Introduction to Space Dynamics	3
AE 424	Aerodynamics I	3
AE 502	Aerospace Propulsion I	3
AE 512	Experimental Methods in Aerospace	3
AE 514	Flight Dynamics and Control	3
AE 524	Aerodynamics II	3
AE 525 & AE 625	Flight Structures I and Flight Structures II	6
AE 528 & AE 628	Aerospace Design I and Aerospace Design II	8
AE 607	Flight Control Systems	3
Technical electives [2]		9
Total Credit Hours		**129**

1. May count as a general education course.
2. The 9 credit hours of technical electives must be chosen from the departmentally approved list. At least 6 of the 9 credit hours must be AE courses.
3. Aerospace engineering will allow students to substitute two ENGR 250 courses (one of which must be ENGR 250PP) to satisfy program engineering drawing-related requirements.
4. See the requirements of the WSU General Education program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/). Starting in fall 2021, first-year college students must take a First-Year Seminar (FYS) within their first two semesters at WSU. Required major courses may also count towards General Education requirements. Students will need to select additional technical electives to reach 129 credit hours required for graduation with assistance from an advisor.
5. Students may substitute ECON 202 (may count as a general education course) or IME 255 to satisfy the program economics-related requirements.

Applied Propulsion Track

The applied propulsion track requires four courses totaling 12 credit hours as follows:

Course	Title	Hours
AE 502	Aerospace Propulsion I (a required course for the BS in AE degree)	3
AE 742	Applied Aeronautical Propulsion (taken as a BS in AE technical elective)	3
AE 743	Applied Jet Propulsion Subsystems (taken as a BS in AE technical elective)	3
An additional applied propulsion related course chosen from one of the following		3
AE 703	Rotor Aerodynamics	
AE 716	Compressible Fluid Flow	
AE 719	Introduction to Computational Fluid Dynamics	
AE 777	Vibration Analysis	
IME 258	Manufacturing Methods and Materials I [6]	
IME 676	Aircraft Manufacturing and Assembly [6]	
An aviation maintenance - powerplant course (not offered at WSU, typically transferred, which is approved by the track coordinator) [6]		
Total Credit Hours		**12**

6. Does not count as a technical elective for the BS in aerospace engineering degree, but may be used to fulfill the applied propulsion track requirement.

Space Systems Track

The space systems track requires four courses totaling 12 credit hours as follows:

Course	Title	Hours
AE 415	Introduction to Space Dynamics	3
AE 773	Intermediate Dynamics	3
AE 715	Intermediate Space Dynamics	3
or AE 718	Nano-Satellite Engineering	
An additional space systems related course chosen from one of the following		3
AE 707	Modern Flight Control System Design I	

AE 715	Intermediate Space Dynamics (If not used to satisfy the requirement above)
AE 718	Nano-Satellite Engineering (If not used to satisfy the requirement above)
AE 759	Neural Networks for System Modeling and Control
ECE 711	Optimization Techniques for Cyber-Physical Systems
MATH 757	Partial Differential Equations for Engineers
PHYS 795	Earth and Space Physics
Total Credit Hours	**12**

Applied Learning

Students in the Bachelor of Science in aerospace engineering program are required to complete an applied learning or research experience to graduate from the program. The requirement can be met by completing the two-course capstone design sequence (8 credit hours) consisting of AE 528 and AE 628.