

Aerospace Engineering, B.S.A.E.

Degree Offered

- Bachelor of Science in Aerospace Engineering

Nature of the Program

West Virginia University Institute of Technology (WVU Tech) and West Virginia University (WVU) have joined their resources to offer a 2+2 aerospace program, (two years at Beckley and two years at Morgantown), leading to a Bachelor of Science in Aerospace Engineering degree. Under this arrangement, a student interested in a BSAE degree from WVU, can start as a freshman at WVU Tech in Mechanical Engineering, complete the appropriate courses in four semesters with a GPA of at least 2.0 at Beckley and transfer to the Mechanical and Aerospace Engineering (MAE) Department at Morgantown. Upon completion of the appropriate curriculum requirements during the following four semesters at Morgantown, he/she will receive a BSAE degree from WVU.

Air travel has fascinated humans for a long time. Recent technical advances in aerospace travel, space exploration, and flight of manned and unmanned vehicles have been phenomenal and continue to gain in significance. Aerospace engineering deals with the science and technology of airborne and space vehicles such as airplanes, rockets, missiles and spacecraft. Aerospace technology has also been successfully adopted to improve the performance of many earth-bound vehicles such as hydrofoil ships, high-speed trains and automobiles.

The Aerospace Engineering program at WVU is designed to prepare the student for a career in the aerospace industry or in government research and development centers and laboratories, as well as in military mission-oriented agencies. The undergraduate curriculum also allows the student to prepare for graduate studies in aerospace engineering and in other engineering, as well as non-engineering fields.

The Aerospace curriculum includes studies in the disciplines encountered in the design of aerospace vehicles, missiles, rockets and spacecraft. The undergraduate curriculum includes extensive study of the basic principles of fluid dynamics, solid mechanics and structures, stability and control, thermal sciences and propulsion.

The student is involved in both theoretical and experimental studies, and is trained to integrate basic knowledge of physical and engineering sciences with practical engineering design. With the breadth and depth of education in aerospace engineering, the student becomes a versatile engineer, competent to work in many areas. The curriculum may serve as a terminal program by incorporating design oriented courses for technical electives, or it may be used as a preparatory program for advanced study by the selection of science oriented courses.

Students can also simultaneously pursue B.S. degrees in both aerospace engineering and mechanical engineering by completing additional courses. Information on this 158 credit hour option can be obtained from the Mechanical/Aerospace Engineering Department at WVU.

The student should refer to the University catalog and relevant WVU publications for additional information on the graduation requirements.

General Education Foundations

Please use this link to view a list of courses that meet each GEF requirement. (<http://registrar.wvu.edu/gef/>)

NOTE: Some major requirements will fulfill specific GEF requirements. Please see the curriculum requirements listed below for details on which GEFs you will need to select.

Code	Title	Hours
General Education Foundations		
F1 - Composition & Rhetoric		3-6
ENGL 101 & ENGL 102 or ENGL 103	Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research Accelerated Academic Writing	
F2A/F2B - Science & Technology		4-6
F3 - Math & Quantitative Reasoning		3-4
F4 - Society & Connections		3
F5 - Human Inquiry & the Past		3
F6 - The Arts & Creativity		3
F7 - Global Studies & Diversity		3
F8 - Focus (may be satisfied by completion of a minor, double major, or dual degree)		9
Total Hours		31-37

Please note that not all of the GEF courses are offered at all campuses. Students should consult with their advisor or academic department regarding the GEF course offerings available at their campus.

Curriculum Requirements

Code	Title	Hours
A minimum 2.0 GPA is required in all MAE courses.		
WVUE 191	First Year Seminar	1
GEF Elective Requirements (5, 6 and 7)		9
ENGL 101 & ENGL 102	Introduction to Composition and Rhetoric and Composition, Rhetoric, and Research (GEF 1)	6
MATH 155	Calculus 1 (GEF 3; Minimum grade of C-)	4
MATH 156	Calculus 2 (GEF 8; Minimum grade of C-)	4
MATH 251	Multivariable Calculus (Minimum grade of C-)	4
MATH 261	Elementary Differential Equations (Minimum grade of C-)	4
ENGR 111	Software Tools for Engineers	3
PHYS 111 & 111L	General Physics 1 and General Physics 1 Laboratory (GEF 2; Minimum grade of C-)	4
PHYS 112 & 112L	General Physics 2 and General Physics 2 Laboratory	4
DRET 120	Drafting 1	2
CHEM 115 & 115L	Fundamentals of Chemistry 1 and Fundamentals of Chemistry 1 Laboratory (GEF 8)	4
ECON 201	Principles of Microeconomics (GEF 4)	3
ECON 202	Principles of Macroeconomics (GEF 8)	3
MAE 241	Statics	3
MAE 242	Dynamics	3
MAE 243	Mechanics of Materials	3
MAE 320	Thermodynamics	3
EE 221 & 221L	Introduction to Electrical Engineering and Introduction to Electrical Engineering Laboratory	4
MAE 215	Introduction to Aerospace Engineering	3
MAE 244L	Dynamics and Strength Laboratory	1
MAE 316	Analysis-Engineering Systems	3
MAE 331	Fluid Mechanics	3
MAE 335	Incompressible Aerodynamics	3
MAE 336	Compressible Aerodynamics	3
MAE 343	Intermediate Mechanics of Materials	3
MAE 345	Aerospace Structures	3
MAE 365	Flight Dynamics	3
MAE 423	Heat Transfer	3
MAE 426	Flight Vehicle Propulsion	3
MAE 434	Experimental Aerodynamics	2
MAE 456 & 456L	Computer-Aided Design and Finite Element Analysis and Computer-Aided Design and Finite Element Analysis Laboratory	3
MAE 460	Automatic Controls	3
MAE 475S	Aircraft Design 1	3
MAE 476	Space Flight and Systems	3
Technical Electives		6
Total Hours		122

Suggested Plan of Study

First Year

Fall	Hours	Spring	Hours
Beckley		Beckley	
ENGL 101 (GEF 1)		3 ENGL 102 (GEF 1)	3
MATH 155 (GEF 3)		4 MATH 156 (GEF 8)	4
CHEM 115 & 115L (GEF 8)		4 ENGR 111	3
DRET 120		2 MAE 241	3
WVUE 191		1 GEF 5	3
		14	16

Second Year

Fall	Hours	Spring	Hours
Beckley		Beckley	
MATH 251		4 ECON 201 (GEF 4)	3
PHYS 111 (GEF 2)		4 MATH 261	4
MAE 242		3 PHYS 112 (GEF 2)	4
MAE 243		3 MAE 320	3
GEF 6		3 MAE 331	3
		17	17

Third Year

Fall	Hours	Spring	Hours
Morgantown		Morgantown	
ECON 202 (GEF 8)		3 MAE 244L	1
MAE 215		3 MAE 336	3
MAE 316		3 MAE 345	3
MAE 336		3 MAE 365	3
MAE 343		3 EE 221 & 221L	4
		15	14

Fourth Year

Fall	Hours	Spring	Hours
Morgantown		Morgantown	
MAE 426		3 MAE 423	3
MAE 434		2 MAE 460	3
MAE 456 & 456L		3 MAE 475S	3
MAE 476		3 Technical Elective	3
Technical Elective		3 GEF 7	3
		14	15

Total credit hours: 122