Dual Degree in Aerospace and Mechanical Engineering

In the modern technical marketplace, college graduates must attain every competitive edge possible to enhance their career opportunities. One way to do this is with a master's degree following the bachelor's degree; however, this often results in more specialization than may be desired and may take an additional two years. Another option is to broaden the undergraduate experience, thus opening more opportunities for the graduate. The dual B.S.A.E./B.S.M.E. program awards both the aerospace engineering and mechanical engineering degrees at the completion of a planned curriculum.

Students under this option pursue the B.S.A.E. and B.S.M.E. degrees simultaneously. This can be accomplished by declaring intentions as a freshman requesting admission to the programs. Maximum scheduling flexibility will result when this decision is made as early as possible in the student's academic career. Dual-degree students must take all courses listed in the 159-hour dual curriculum under the Major tab and satisfy the other requirements of the two individual programs.

Degree Requirements

Students must meet the following criteria to qualify for a Bachelor of Science in Aerospace Engineering and Bachelor of Science in Mechanical Engineering degree:

- Complete a minimum of 159 credit hours
- Satisfy WVU's undergraduate degree requirements
- Satisfy Statler College's undergraduate degree requirements (http://catalog.wvu.edu/undergraduate/collegeofengineeringandmineralresources/#policiestext)
- Complete all courses listed in the curriculum requirements with the required minimum grades
- Attain an overall grade point average of 2.00 or better
- Attain a WVU grade point average of 2.00 or better
- Attain a Statler grade point average of 2.00 or better
- A maximum of one math or science course with a grade of D+, D, or D- may apply toward a Statler College degree
- Complete a survey regarding their academic and professional experiences at WVU, as well as post-graduation job placement or continuing education plans

The Statler GPA is computed based on all work taken at WVU with a subject code within Statler College (BIOM, BMEG, CE, CHE, CPE, CS, CSEE, CYBE, EE, ENGR, ENVE, ETEC, IENG, IH&S, MAE, MINE, PDA, PNGE, SAFM, SENG) excluding ENGR 140, ENGR 150, and CS 101. The WVU GPA is computed based on all work taken at West Virginia University. The Overall GPA is computed based on all work taken at West Virginia University and transfer work.

Curriculum Requirements

Code	Title	Hours
University Requirements		16
Fundamentals of Engineering Requirements		5
Math and Science Requirements		28
Aerospace Engineering and Mechanical Engineering Program Requirements		110
Total Hours		159

University Requirements

Code	Title	Hours
General Education Foundations (GEF) 1, 2, 3, 4, 5, 6, 7, and 8 (31-37 Credits)		
Outstanding GEF Requirements 1, 5, 6, and 7		15
ENGR 191	First-Year Seminar	1
Total Hours		16

Fundamentals of Engineering Requirements

Code	Title	Hours
A minimum grade of C- is required in all Fundamentals of Engineering courses.		
ENGR 101	Engineering Problem Solving 1	2

Engineering Problem Solving (Select one of the following):		3
CHE 102	Introduction to Chemical Engineering	
ENGR 102	Engineering Problem-Solving 2	
ENGR 103	Introduction to Nanotechnology Design	
MAE 102	Introduction to Mechanical and Aerospace Engineering Design	
Total Hours		5

Math and Science Requirements

Code	Title	Hours
A minimum grade of C- is required in all Math and Science courses.		
CHEM 115 & 115L	Fundamentals of Chemistry 1 and Fundamentals of Chemistry 1 Laboratory (GEF 2B)	4
Calculus I: (GEF 3, minimum grade of C-)		4
MATH 155	Calculus 1	
MATH 153 & MATH 154	Calculus 1a with Precalculus and Calculus 1b with Precalculus	
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
PHYS 111 & 111L	General Physics 1 and General Physics 1 Laboratory (minimum grade of C-)	4
PHYS 112 & 112L	General Physics 2 and General Physics 2 Laboratory (GEF 8)	4
Total Hours		28

Aerospace Engineering and Mechanical Engineering Program Requirements

Code	Title	Hours
ECON 201	Principles of Microeconomics (GEF 4)	3
EE 221	Introduction to Electrical Engineering	3
EE 221L	Introduction to Electrical Engineering Laboratory	1
IENG 302	Manufacturing Processes	2
MAE 202	Sophomore Seminar	1
MAE 211	Mechatronics	2
MAE 211L	Mechatronics Laboratory	1
MAE 212L	Introduction to Computer Aided Design	1
MAE 215	Intro to Aerospace Engineering	3
MAE 216L	Intermediate Engineering Computation	1
MAE 241	Statics	3
MAE 242	Dynamics	3
MAE 243	Mechanics of Materials	3
MAE 253	Fundamentals of Materials Engineering	2
MAE 316	Analysis-Engineering Systems	3
MAE 320	Thermodynamics	3
MAE 331	Fluid Mechanics	3
MAE 335	Incompressible Aerodynamics	3
MAE 336	Compressible Aerodynamics	3
MAE 342	Dynamics of Machines	3
MAE 345	Aerospace Structures	3
MAE 353	Intermediate Mechanics of Materials	3
MAE 423	Heat Transfer	3
MAE 434 & 434L	Experimental Aerodynamics and Experimental Aerodynamics Laboratory	3

MAE 456 & 456L	Computer-Aided Design and Finite Element Analysis and Computer-Aided Design and Finite Element Analysis Laboratory	3
MAE 471S	Principles of Engineering Design	3
MAE 472S	Engineering Systems Design	3
MAE 476	Space Flight and Systems	3
Aerospace Engineering Area of Emphasis		12
Aeronautical Engineering (12 Total Hours)		
Astronautical Engineering (12 Total Hours)		
Mechanical Engineering Area of Emphasis		15
Dynamics and Controls (15 Total Hours)		
Energy Systems (15 Total Hours)		
Materials Science (15 Total Hours)		
Robotics (16 Total Hours)		
AE Technical Electives [+]		6
ME Technical Electives [++]		6
Total Hours		110

+

See BSAE degree (http://catalog.wvu.edu/undergraduate/collegeofengineeringandmineralresources/departmentofmechanicalandaerospace/aerospace/#majortext) for list of electives

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See BSME degree (http://catalog.wvu.edu/undergraduate/collegeofengineeringandmineralresources/departmentofmechanicalandaerospace/mechanical/#majortext) for list of electives

Suggested Plan of Study

It is important for students to take courses in the order specified as close as possible; all prerequisites and concurrent requirements must be observed. A typical B.S.A.E./B.S.M.E. degree program that completes degree requirements in five years is listed below.

First Year

Fall	Hours	Spring	Hours
CHEM 115 & 115L	4	MAE 102	3
ENGL 101 (GEF 1)	3	MATH 156 (GEF 8)	4
ENGR 101	2	PHYS 111 & 111L (GEF 8)	4
ENGR 191	1	GEF Elective 6	3
MATH 155 (GEF 3)	4	GEF Elective 7	3
GEF Elective 5	3		
	17		17

Second Year

Fall	Hours	Spring	Hours
MAE 202[*]	1	ENGL 102 (GEF 1)	3
MAE 212L	1	MAE 211 & 211L	3
MAE 215	3	MAE 242	3
MAE 216L	1	MAE 243	3
MAE 241	3	MAE 253	2
MATH 251 (GEF 8)	4	MATH 261	4
PHYS 112 & 112L	4		
	17		18

Third Year

Fall	Hours	Spring	Hours
ECON 201	3	MAE 316	3

MAE 320	3	MAE 336*	3
MAE 331	3	MAE 345*	3
MAE 335*	3	AE AOE Course	3
MAE 353	3	ME AOE Course	3
	15		15

Fourth Year

Fall	Hours	Spring	Hours
MAE 434 & 434L*	3	IENG 302	2
MAE 476	3	MAE 342	3
EE 221 & 221L	4	AE AOE Course	3
AE AOE Courses	6	ME AOE Courses	6
		AE Technical Electives	3
	16		17

Fifth Year

Fall	Hours	Spring	Hours
MAE 456 & 456L	3	MAE 423	3
MAE 471S	3	MAE 472S	3
ME AOE Courses	6	ME Technical Electives	6
AE Technical Elective	3		
	15		12

Total credit hours: 159