B.S. IN AEROSPACE ENGINEERING

http://www.coe.miami.edu/dept-mac/

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Curriculum Requirements

Code	Title	Credit Hours
Engineering Courses		
CAE 210	Mechanics of Solids I	3
ECE 205	Principles of Electrical Engineering--I	3
IEN 311	Applied Probability and Statistics	3
MAE 111	Introduction to Engineering I	3
MAE 112	Introduction to Engineering II	2
MAE 202	Dynamics	3
MAE 207	Mechanics of Solids II	3
MAE 241	Measurements Laboratory	3
MAE 302	Mechanical Behavior of Materials	3
MAE 303	Thermodynamics	3
MAE 309	Fluid Mechanics	3
MAE 310	Heat Transfer	3
MAE 341	Mechanical Design I	3
MAE 351	Mechanics Laboratory	2
MAE 371	Aerodynamics	3
MAE 404	Experimental Engineering Laboratory	2
MAE 415	Automatic Control	3
MAE 444	Capstone Aerospace Design Project-I	3
MAE 445	Capstone Aerospace Design Project-II	3
MAE 446	Aircraft Design	3
MAE 470	Introduction to Aerospace Structures	3
MAE 471	Flight Dynamics	3
MAE 472	Design of Aerospace Structures	3
MAE Technical Elective		6
MAE 473	Aerospace Propulsion	3
Math and Science Courses		
MTH 151	Calculus I for Engineers	5
MTH 162	Calculus II	4
MTH 211	Calculus III	3
MTH 311	Introduction to Ordinary Differential Equations	3
CHM 151	Chemistry for Engineers	3
CHM 153	Chemistry Laboratory for Engineers	1
PHY 221	University Physics I	3
PHY 222	University Physics II	3
PHY 223	University Physics III	3
PHY 224	University Physics II Lab	1
PHY 225	University Physics III Lab	1
Additional Requirements		
ENG 105	English Composition I	3
ENG 107	English Composition II: Science and Technology	3
Arts and Humanities Cognate		9
People and Society Cognate		9
Total Credit Hours		**129**

Plan of Study

Freshman Year		
Fall		**Credit Hours**
MAE 111	Introduction to Engineering I	3
ENG 105	English Composition I	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
	Credit Hours	**14**
Spring		
MAE 112	Introduction to Engineering II	2
CAE 210	Mechanics of Solids I	3
ENG 107	English Composition II: Science and Technology	3
MTH 162	Calculus II	4
PHY 222	University Physics II	3
PHY 224	University Physics II Lab	1
	Credit Hours	**16**
Sophomore Year		
Fall		
MAE 207	Mechanics of Solids II	3
IEN 311	Applied Probability and Statistics	3
MTH 211	Calculus III	3
PHY 223	University Physics III	3
PHY 225	University Physics III Lab	1
HA Cognate (HA Elective) [1]		3
	Credit Hours	**16**
Spring		
MAE 202	Dynamics	3
MAE 241	Measurements Laboratory	3
CHM 151	Chemistry for Engineers	3
CHM 153	Chemistry Laboratory for Engineers	1
ECE 205	Principles of Electrical Engineering--I	3
PS Cognate (PS Elective) [1]		3
	Credit Hours	**16**
Junior Year		
Fall		
MAE 302	Mechanical Behavior of Materials	3
MAE 303	Thermodynamics	3
MAE 309	Fluid Mechanics	3
MAE 341	Mechanical Design I	3
MTH 311	Introduction to Ordinary Differential Equations	3
HA Cognate (HA Elective) [1]		3
	Credit Hours	**18**
Spring		
MAE 310	Heat Transfer	3
MAE 351	Mechanics Laboratory	2
MAE 470	Introduction to Aerospace Structures	3
MAE 371	Aerodynamics	3
MAE Technical Elective [2]		3
PS Cognate (PS Elective) [1]		3
	Credit Hours	**17**

Senior Year		
Fall		
MAE 404	Experimental Engineering Laboratory	2
MAE 444	Capstone Aerospace Design Project-I	3
MAE 446	Aircraft Design	3
MAE 471	Flight Dynamics	3
MAE 472	Design of Aerospace Structures	3
MAE 473	Aerospace Propulsion	3
	Credit Hours	**17**
Spring		
MAE 415	Automatic Control	3
MAE 445	Capstone Aerospace Design Project-II	3
MAE Technical Electives [2]		3
HA Cognate (Adv. HA Elective) [1]		3
PS Cognate (Adv. PS Elective) [1]		3
	Credit Hours	**15**
	Total Credit Hours	**129**

1 You must complete a minimum of 1 PS cognate and 1 HA cognate to be selected from the list of available cognates. Each cognate should be a minimum of three courses (9 credit hours).

2 Technical Electives are advanced courses in mathematics, science or engineering, approved by the Faculty Advisor, as appropriate for individual objectives.

Mission

The mission of the Department of Mechanical and Aerospace Engineering is to provide excellent undergraduate education in aerospace engineering and undergraduate and graduate education in mechanical engineering that will prepare graduates to meet Society's changing needs and aspirations.

The mission of the Aerospace Engineering program is to provide excellent undergraduate education in Aerospace Engineering that will prepare graduates to meet society's changing needs and aspirations.

Goals

The educational objectives of the undergraduate Aerospace Engineering (B.S.A.S.E.) Program are to prepare graduates, within a few years after graduation, to be:

- working as a professional or as an entrepreneur in an area related to aerospace engineering, and/or
- exhibiting lifelong learning by pursuing or having completed a graduate or professional degree and/or demonstrated professional development.

Student 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.