

Department of Aerospace Engineering and Mechanics

BSAE Program – 126 credit hours

FRESHMAN YEAR

Fall (16 credit hours)

Placement	MATH 125 Calculus I MA 4	MATH 126 PH 105 AEM 201 AEM 249

Placement	CH 101 Chemistry NS 4	

	ENGR 104 Fundamentals of Engineering ENGR 3	AEM 201
MATH 112, MATH 113, MATH 115, or MATH 125		

	UA 101 Legends CC 1 (see Note 1)	

	AEM 121 Intro Aerospace ES 1 [Fall Only]	
MATH 125		

HU/L/FA/WL Elective HU/L/FA/WL 3 (see Note 4)
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Legend	
CC	Freshman Year Compass Course
ES	Engineering Science
FC	Freshman Composition
GC	US and Global Citizenship
HI/SB	History/Social & Behavioral Sciences
HU/L/FA/WL	Humanities/Literature/Fine Arts/World Languages
MA	Mathematics
NS	Natural Science Requirement
W	Advanced Writing

Spring (16 credit hours)

MATH 125	MATH 126 Calculus II MA 4	MATH 227 MATH 237 MATH 238 PH 106 ME 215 AEM 250 AEM 264

MATH 125	PH 105 Physics I NS 4	PH 106 AEM 201

placement or EN 101/102	EN 103 Adv English Composition FC 3	

	ENGR 101 The World of Engineering CC 1	

ENGR 104	ENGR 161 Small-Scale Engr Graphics ENGR 1 (see Note 3)	

	AEM 249 Algorithm Devl Implementation ES 3 (see Note 2)	AEM 341 AEM 368 AEM 468
MATH 125		

Key		
Pre-requisite	Course # Title Area & Credits	Downward Dependencies
Pre-requisite with concurrency		

SOPHOMORE YEAR

Fall (17 credit hours)

MATH 126	MATH 227 Calculus III MA 4	AEM 311 AEM 461

MATH 126	MATH 237 Intro to Linear Algebra MA 3	AEM 341 AEM 468

MATH 126 PH 105	PH 106 Physics II NS 4	

See Note 6	AEM 201 Statics ES 3	AEM 250 AEM 264 AEM 311

HI/SB Elective HI/SB 3 (see Note 5)
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Notes:
1. Transfer students should take UA 201 to fulfill the requirement of UA General Education.
2. A student may substitute CS 100 (4 semester hours) or CS 110 (4 semester hours) or RRS 101&102 for AEM 249.
3. ENGR 161 is recommended. However, it can be satisfied by completing ENGR 171.
4. At least 3 hours must be L (Literature).
5. At least 3 hours must be HI (History).
6. Prerequisite of AEM 201 is: (MATH 125 or MATH 145) and (PH 105 or PH 125) and (ENGR 103 or ENGR 104 or ENGR 123)

Spring (16 credit hours)

MATH 126	MATH 238 Applied Diff Equations I MA 3	ME 349 AEM 313 AEM 368 AEM 420

MATH 126 AEM 201	AEM 250/251 Mechanics of Materials / Lab ES 3/1	AEM 341

MATH 126 AEM 201	AEM 264 Dynamics ES 3	AEM 313 AEM 368

MATH 227 AEM 201	AEM 311 Fluid Mechanics ES 3	AEM 313 AEM 413 AEM 420

HU/L/FA/WL Elective HU/L/FA/WL 3 (see Note 4)
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This is an unofficial flow chart prepared to assist students in planning their coursework. The UA Undergraduate Catalog contains the official listing of academic information.
Aerospace Engineering and Mechanics and other departments change their pre-requisites and pre-requisites with concurrency from time to time. Students should consult the UA Undergraduate Catalog and seek advising prior to registering for courses.
Refer to Department website for Course Rotation Schedule.
Go to https://catalog.ua.edu/ for information on pre-requisite and pre-requisite with concurrency
Dr. Weihua Su Department of Aerospace Engineering and Mechanics Version: 05/27/2025

Department of Aerospace Engineering and Mechanics

BSAE Program – 126 credit hours

JUNIOR YEAR

Fall (16 credit hours)

AEM 264 AEM 311	AEM 313 Aerodynamics ES 3	AEM 368 AEM 402
MATH 238		

MATH 237 AEM 249 (or see Note 2) AEM 250	AEM 341/351 Aerospace Structures / Lab ES 3/1	AEM 402 AEM 451 AEM 461

	AEM 395 Prof Devel Aerospace Engr ES/W/GC 3 [Fall Only]	AEM 402
AEM 313 or AEM 341		

MATH 126	ME 215 Thermodynamics ES 3	AEM 413

HI/SB Elective HI/SB 3 (see Note 5)
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Spring (15 credit hours)

MATH 238 AEM 249 (or see Note 2) AEM 264	AEM 368 Flight Mechanics ES 3 [Spring Only]	AEM 402 AEM 468
AEM 313		

ME 215 AEM 311	AEM 413 Compressible Flow ES 3 [Spring Only]	AEM 402 AEM 408

MATH 238	ME 349 Applied Num Methods ES 3	AEM 420 AEM 461 AEM 468

HU/L/FA/WL Elective HU/L/FA/WL 3 (see Note 4)
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HI/SB Elective HI/SB 3 (see Note 5)
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SENIOR YEAR

Fall (15 credit hours)

AEM 313 AEM 341 AEM 368 AEM 413 (or 513)	AEM 402 Integ Aerospace Design I ES/(W) 3 [Fall Only]	AEM 404
AEM 408 (or 508)		

AEM 413 (or 513)	AEM 408 Propulsion Systems ES 3 [Fall Only]	

MATH 237 ME 349 AEM 249 (or see Note 2) AEM 368	AEM 468 Flight Dynamics & Control ES 3 [Fall Only]	

variable	AEM Elective ES 3	
variable		

variable	AEM or Appd STEM Elective ES 3	
variable		

Spring (15 credit hours)

AEM 402	AEM 404 Integ Aerospace Design II ES 3 [Spring Only]	

variable	AEM Elective ES 3	
variable		

variable	AEM Elective ES 3	
variable		

variable	AEM or Appd STEM Elective ES 3	
variable		

variable	AEM or Appd STEM Elective ES 3	
variable		

Legend	
CC	Freshman Year Compass Course
ES	Engineering Science
FC	Freshman Composition
GC	US and Global Citizenship
HI/SB	History/Social & Behavioral Sciences
HU/L/FA/WL	Humanities/Literature/Fine Arts/World Languages
MA	Mathematics
NS	Natural Science Requirement
W	Advanced Writing

Key		
Pre-requisite	Course #	Downward Dependencies
Pre-requisite with concurrency	Title Area & Credits	

W Courses:

1. In the catalog of 2025-2026, only AEM 395 is designated a W course.
2. AEM 402 is not a W course starting the catalog year 2025-2026. However, as in the old catalogs, it continues to be taught as a W course.
3. AEM 495 is no longer a course starting the catalog year 2024-2025. However, as in the old catalogs, it continues to be taught as a W course.

AEM Elective:

1. Go to <https://catalog.ua.edu/> for the list of available AEM elective courses to fulfill the requirements of the BSAE program.
2. The AEM dept. also offers elective courses on special topics organized by individual faculty advisors upon approval by the department.
3. Students admitted to the AMP or other applicable programs may enroll in the 500-level versions of the courses available in the table.
4. Students admitted to the AMP or other applicable programs may enroll in the 600-level AEM courses.
5. Consult with the AEM undergraduate advisor for the offering schedule of AEM electives

Approved STEM Elective:

1. Any course defined as an AEM Elective.
2. Any 300-level or 400-489, 3-hour College of Engineering course, or MTE 271.
3. PH 301, or PH 302, or PH 451, or ST 450, or ST 451.
4. Students admitted to the AMP or other applicable programs may enroll in the 500-589 or 600-689 College of Engineering courses as STEM electives.
5. Students can only choose one from GES 400 and ST 450.