

UNDERGRADUATE CURRICULUM CHANGE MEMO

Date: May 25, 2022

From: Methaq S. Abed, Aerospace and Mechanical Engineering

Through: Jack Chessa, Department Chair, Aerospace and Mechanical Engineering

Through: Virgilio Gonzalez, Chair, Curriculum Committee, College of Engineering


Virgilio Gonzalez

Through: Louis J. Everett, Associate Dean for Academic Affairs and Undergraduate Studies, College of Engineering

Through: Patricia Nava, Dean College of Engineering *Patricia A. Nava*

To: Andrew Fleck, Chair of University Curriculum Committee

Proposal Title: Adding Courses to BS-AERO.

The Aerospace and Mechanical Engineering Department has launched the B.S. in Aerospace and Aeronautical Engineering in Spring 2022. We are requesting the following changes.

1. Add CE 2326 as one of the degree requirements. Some AERO courses require CE 2326 as a prerequisite.
2. Add BIOL 1305/1107 to the science elective area. BIOL 1305, General Biology, and BIOL 1107 may be taken concurrently.
3. Since the Engineering Analysis I course is no longer offered by the department, we would like to change the name of Engineering Analysis II, to be only Engineering Analysis, which is MECH 3352.
This name change will affect both the B.S. in Aerospace Engineering and BS. in Mechanical Engineering.

These changes needed to make minor adjustments to the new Aerospace program to match that of mechanical engineering. This will give students transitioning between degrees more flexibility

CURRICULUM CHANGE PROPOSAL

APPROVAL PAGE

Proposal Title: Changes to BS-AERO

College: Engineering

Department: Aerospace and Mechanical Engineering

DEPARTMENT CHAIR

I have read the enclosed proposal and approve this proposal on behalf of the department.



May 27, 2022 _____

Signature

Date

COLLEGE CURRICULUM COMMITTEE CHAIR

I have read the enclosed documents and approve the proposal on behalf of the college curriculum committee.

Signature

Date

COLLEGE DEAN

I have read the enclosed documents and approve the proposal on behalf of the college. I certify that the necessary funds will be allocated by the college in support of this proposal.

Signature

Date

COURSE CHANGE FORM

All fields below are required

College : Engineering

Department : Aerospace and Mechanical Engineering

Rationale for changing the course:
Provides consistency with the class level

All fields below are required

Subject Prefix and number MECH 3352

Course Title Engineering Analysis II

Change	From	To
Ex. Prerequisite	Ex. POLS 2310	Ex. POLS 2312
Name Change	Engineering Analysis II	Engineering Analysis

These changes will be reflected in Banner, Goldmine, and the catalog

Degree Plan

Code	Title	Hours
Designated Core		
<u>CE 2326</u>	<u>Econs for Engrs and Scientists</u>	<u>3</u>
<u>CHEM 1305</u> & <u>CHEM 1105</u>	General Chemistry and Laboratory for CHEM 1305	4
<u>MATH 1508</u> or <u>MATH 1310</u> or <u>MATH 1411</u>	Precalculus Trigonometry and Conics Calculus I	3-5
<u>PHYS 2320</u> & <u>PHYS 2120</u>	Introductory Mechanics and Laboratory for PHYS 2320	4
University Core Curriculum(All courses require a grade of C or better.)		
<u>Complete the University Core Curriculum requirements.</u>		42
Aerospace Engineering (Other Requirements) (All courses require a grade of C or better.)		
Required Courses: Some of these are included in the core.		
<u>MATH 1411</u>	Calculus I	4
<u>MATH 1312</u>	Calculus II	3
<u>MATH 2313</u>	Calculus III	3
<u>MATH 2326</u>	Differential Equations	3
Math/Science Elective		
Select one of the following: (Math courses in this section cannot be used to satisfy other degree requirements)		3
<u>MATH 3323</u>	Matrix Algebra	
<u>MATH 3335</u>	Applied Analysis I	
<u>MATH 4326</u>	Linear Algebra	
<u>MATH 4329</u>	Numerical Analysis	
<u>MATH 4336</u>	Applied Analysis II	
<u>PHYS 2325</u>	Survey of Modern Physics	
<u>PHYS 3351</u>	Analytical Mechanics I	
<u>STAT 3320</u>	Probability and Statistics	
Science Elective		
Select one of the following:		4
<u>CHEM 1306</u> & <u>CHEM 1106</u>	General Chemistry and Laboratory for CHEM 1306	
<u>PHYS 2321</u> & <u>PHYS 2121</u>	Introductory Electromagnetism and Laboratory for PHYS 2321	
<u>BIOL 1305</u>	<u>General Biology</u>	
<u>& BIOL 1107</u>	<u>And Laboratory for BIOL 1305</u>	
Math Elective		
Select one of the following:(Math courses in this section cannot be used to satisfy other degree requirements)		

Code	Title	Hours
MATH 3323	Matrix Algebra	3
MATH 3335	Applied Analysis I	3
MATH 4329	Numerical Analysis	3
MATH 4336	Applied Analysis II	3
STAT 3320	Probability and Statistics	3
Aerospace Engineering Major		
Required Courses:		
MECH 1305	Graphic & Design Fundamentals º	3
MECH 1321	Mechanics I-Statics º	3
MECH 2103	Engineering Computations º	1
MECH 2311	Intro to Thermal-fluid Sci º	3
MECH 2322	Mechanics of Materials º	3
MECH 2340	Mechanics II -Dynamics º	3
MECH 2342	Electro Mechanical Systems º	3
MECH 3352	Engineering Analysis †	3
AERO 2131	Aerospace Materials Lab	1
AERO 2331	Aerospace Materials	3
AERO 3312	Aerodynamics 1	3
AERO 3323	Aerospace Structures I	3
AERO 3343	Systems Modelling and Control	3
AERO 4322	Aerospace Propulsion	3
AERO 4364	Aerospace Communications	3
AERO 4365	Aerospace Systems Engineering	3
AERO 4366	Aerospace Senior Design	3
Select two of the following: Laboratory Experience		2
MECH 3103	Mechatronics Lab	
MECH 3113	Thermo-fluid Lab	
MECH 3123	Solid Mechanics Lab	
Concentration Electives: Must take 3 from one Concentration †		9
Aircraft Concentration:		
AERO 4311	Flight Dynamics and Controls	
AERO 4312	Aircraft Design	
AERO 4313	Aerospace Structures II	
AERO 4319	Special Topics in Aeronautics	
Launch Vehicles and Missiles Concentration		
AERO 4331	Aerodynamics II	
AERO 4332	Hypersonic Vehicle Design	
AERO 4335	Structural Dynamics	
AERO 4339	Special Topics in Hypersonics	
Satellite Concentration		
AERO 4351	Orbit and Attitude Dynamics	
AERO 4353	Spacecraft Environments	

Code	Title	Hours
AERO 4355	Space Mission Design	
AERO 4359	Special Topics in Astronautics	
Technical Electives ²		6
Total Hours		128
Course List		

University of Texas at El Paso
Aerospace and Mechanical Engineering Department

Phone: (915) 747-5450

B.S. in Aerospace Engineering Degree Plan

Year	Semester I			Hrs	Semester II			Hrs
Freshman	MECH	1305	Graphic and Design Fundamentals +	3	MECH	1321	Mechanics I – Statics + (MATH 1411+ PHYS 2420+)	3
	RWS	1301	Rhetoric & Composition I +	3	HIST	1301	History of US to 1865 +	3
	MATH	1411	Calculus I +	4	RWS	1302	Rhetoric & Composition 2 + (RWS 1301+)	3
	PHYS	2320/2120	Physics I (MATH 1411 is CO requisite)	4	MATH	1312	Calculus II + (MATH 1411+)	3
	CS	1310 or 1320	Component Area (CS 1310, CS 1320, EL 1301, or UNIV1301)+	3	CHEM CHEM	1305 1105	Chemistry I +	4
				17				16
Sophomore	MECH	2322	Mechanics of Materials + (MECH 1321+)	3	MECH	2340	Mechanics II – Dynamics + (MECH 1321+)	3
	MATH	2313	Calculus III + (MATH 1312+)	3	MECH	2311	Introduction to Thermo-Fluid Science + (MATH 1312+)	3
	AERO	2331	Aerospace materials + (CHEM 1305+,CHEM 1105+)	3	MECH	2103	Engineering Computations + (MATH1312+)	1
	AERO	2131	Aerospace materials Lab (MECH 1305+)	1	MECH	2342	Electro-Mechanical Systems + (MATH 1312+)	3
	HIST	1302	History of US since 1865	3	CE	2326	Econ for Engrs and scientists+	3
			Science Elective + (see NOTE 1)	4	MATH	2326	Differential Equations	3
					17			
Junior			Laboratory Experience (see NOTE 2)	1			Laboratory Experience (see NOTE 2)	1
	MECH	3352	Engineering Analysis II (MATH 2326+)	3	COMM	1302	Business and Professional Communication +	3
	AERO	3312	Aerodynamics I (MECH 2311+)	3	AERO	3343	Aerospace Dynamics and Controls (MATH 2326+, MECH 2340+, MECH 2342+)	3
	AERO	3323	Aerospace Structures I (AERO 2331+, MECH 2322+)	3			Aero concentration I (NOTE 5)	3
	POLS	2310	Introduction to Politics +	3			Humanities Electives +	3
	MATH		Math Elective (see NOTE 3)	3			Science/Math Elective+ (see NOTE 4)	3
					16			
Senior			Aero concentration II (NOTE 5)	3	AERO	4366	Aerospace Senior Design (see Note 7).	3
	AERO	4322	Propulsion (AERO 3312)	3			Aero Free Elective (NOTE 6)	3
			Aero concentration III (NOTE 5)	3			Aero Free Elective (NOTE 6)	3
	MECH	4326	Finite Element Analysis	3	POLS	2311	American Government and Politics	3
	AERO	4312	Aircraft Design (AERO3312, AERO 3323, MECH 3352)	3			Visual and Performing Art Elective	3
					15			
Total 128 Credit hrs								

Laboratory Experience			
MECH	3123	Solid Mechanics Lab (MECH 2322+)	1
MECH	3113	Thermo-fluid Lab (MECH 2311+)	1
MECH	3103	Mechatronics Lab (MECH 2342+)	1

Aerostructures Concentration			
AERO	4313	Aerospace structures II (AERO 3323)	3
AERO	4325	Vibrations	3
AERO	4335	Aerospace structural dynamics (MECH 2340+, MECH 2342+)	3
AERO	4329	Special topics in aerospace structures	3

Propulsion and Aerodynamics Concentration			
AERO	4331	Aerodynamics II (AERO 3312)	3
AERO	4319	Special topics in propulsion	3

Aerospace Dynamics and Controls Concentration			
AERO	4311	Flight Dynamics and Controls (AERO 3312, AERO 3343)	3
AERO	4351	Orbit and Attitude Dynamics (MATH 2326+, AERO 3343)	3
AERO	4359	Special Topics in Aerospace Dynamics and Controls	

Aerospace Systems Concentration			
AERO	4332	Hypersonic Vehicle Design (MECH 3352)	3
AERO	4339	Advanced topics in Aerospace Systems Engineering (Hypersonic)	3
AERO	4353	Spacecraft Environments (MATH 2326 or PHYS 2420)	3
AERO	4355	Space Mission Design	3
AERO	4364	Aerospace Communications (MECH 2342+)	3
AERO	4365	Aerospace System Engineering (CE 2326+, COMM 1302+)	3

Notes: Prerequisites listed in parentheses, +Grade of C or better required

1. Must be either CHEM 1306 with CHEM 1106, PHYS 2321+2121 or by permission of advisor.
2. From the department-approved list of Laboratory Experience courses
3. Selected from MATH 3323, 3335, 4326, 4329, 4336, STAT 3320. By completing 3 of these electives you may be eligible for a Mathematics minor, interested students should consult the Department of Mathematics.
4. Approved courses are: PHYS 2325, PHYS 3351, PHYS 4348, or any course listed in NOTE 3 (not already taken), from MATH 3323, 3335, 4326, 4329, 4336, STAT 3320.
5. Must take three classes from any single aerospace concentration
6. Must be a class from a different concentration area
7. The student must be in the last semester with a GPA of 2.0+

Undergraduate Program Director: Dr. Methaq Abed, msabed@utep.edu

Program advisor: Iliana Solis, itrevino2@utep.edu

Lower-division Level advisor: Evelyn Torres, etorres28@utep.edu

Lower-division Level advisor: Turner, Ian M, imturner@utep.edu