
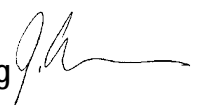


UNDERGRADUATE CURRICULUM CHANGE MEMO

Date: January 6, 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

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

Through: Patricia Nava, Dean College of Engineering

To: Andrew Fleck, Chair of University Curriculum Committee

Proposal Title: Changes to BSME and BS Aerospace and Aeronautical Engineering

The Aerospace and Mechanical Engineering Department proposes the following changes in the degree plan for Mechanical Engineering. The changes will allow the students to choose from the specified Aerospace courses to count toward the elective courses for the senior level in Mechanical Engineering degree.

The following AERO courses are in the Catalog for the B.S. in Aerospace and Aeronautical Engineering, and we want to add them to the M.E. degree. The courses are AERO 3312 (Aerodynamics I), AERO 3323 (Aerospace Structure I), AERO 3343 (Aerospace Dynamics and Controls), AERO 4313 (Aerospace Structure II), AERO 4322 (Propulsion), and AERO 4331 (Aerodynamics II). These courses will count toward the Technical Elective courses for the Mechanical Engineering program. The new degree plan is attached to this proposal.

The degree plan for B.S. in Aerospace and Aeronautical Engineering has several special topics in different concentration areas. We need a special topics course in the area of Aerostructure Concentration. We require a prerequisite of Aero 3323 with a grade of "D" or better.

The course AERO 4335 has two prerequisites from the MECH courses; these are the Dynamics and Electromechanical Systems. After an in-depth review of the course contents, we found that the students need MATH 2326 (Differential Equations) to solve the problems, and there is no need for the Electromechanical System course. Therefore, we are asking to make the change that will require the students to have the Math skills that will help them succeed in the class.

CURRICULUM CHANGE PROPOSAL

APPROVAL PAGE

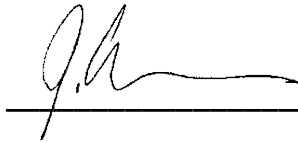
Proposal Title: Changes to BSME and BS-AERO

College: Engineering

Department: Aerospace and Mechanical Engineering

DEPARTMENT CHAIR

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



January 6, 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

From: [Granda, Virginia D](#)
To: [Rivera, Julie A](#)
Subject: FW: UG Proposals Approved by our COECC
Date: Tuesday, January 25, 2022 10:40:35 AM
Attachments: [image001.png](#)
[AEME--Changes to BSME and BS-AEAE Proposal.pdf](#)
[BSCEM Undergraduate Curriculum Change \(revised\).pdf](#)
[EEL--Changes to the BS-EIL-Course-Prerequisites-and-Catalog.pdf](#)
[MMBME Course Changes.pdf](#)
[ECE RA Minor Proposal - Revised.pdf](#)
[image004.png](#)

Good morning Julie,

Attached are the approved UG proposals from our college.

Have a great week,

Virginia



Virginia Granda-Becker
Coordinator for Undergraduate Studies
and Academic Affairs

Engineering Edge Center
ENGR E-201B
The University of Texas at El Paso
500 WW. University Ave.
El Paso, TX 79968
Office: 915-747-8011
www.utep.edu/engineering/eec

From: Nava, Patricia A.
Sent: Tuesday, January 25, 2022 10:29 AM
To: Granda, Virginia D <granda@utep.edu>
Subject: RE: Updated Memo

All of the actions are approved.

From: Granda, Virginia D
Sent: Tuesday, January 25, 2022 8:52 AM
To: Nava, Patricia A. <pnav@utep.edu>
Subject: Updated Memo

Dr. Nava,

Per your request, attached is the modified memo from AEME.

Best Regards,

Virginia



Virginia Granda-Becker
Coordinator for Undergraduate Studies
and Academic Affairs

Engineering Edge Center
ENGR E-201B
The University of Texas at El Paso
500 WW. University Ave.
El Paso, TX 79968
Office: 915-747-8011
www.utep.edu/engineering/eec

Good afternoon Dr. Nava,

Attached are the UG Proposals that have been approved.

Please reply letting me know if you approve them.

Best Regards,

Virginia



Virginia Granda-Becker
Coordinator for Undergraduate Studies and Academic Affairs

College of Engineering
The University of Texas at El Paso
500 W. University Ave
El Paso, TX 79968
Office: (915) 747-8011
www.utep.edu/engineering/eec

From: Everett, Louis

Sent: Monday, January 10, 2022 9:35 AM

To: Granda, Virginia D <granda@utep.edu>

Subject: Re: UG Proposals Approved by our COECC

I approve

Get [Outlook for iOS](#)

From: Granda, Virginia D <granda@utep.edu>

Sent: Monday, January 10, 2022 9:00:58 AM

To: Everett, Louis <leverett@utep.edu>

Subject: FW: UG Proposals Approved by our COECC

Good morning Dr. Everett,

Attached are the UG proposals that have been approved by the COECC and its chair.

Please reply letting me know if you approve them.

Best Regards,

Virginia



Virginia Granda-Becker
Coordinator for Undergraduate Studies and Academic Affairs

College of Engineering
The University of Texas at El Paso
500 W. University Ave
El Paso, TX 79968
Office: (915) 747-8011
www.utep.edu/engineering/eec

From: Gonzalez, Virgilio

Sent: Friday, January 7, 2022 5:04 PM

To: Granda, Virginia D <granda@utep.edu>

Subject: RE: UG Proposals Approved by our COECC

Virginia,

I approve the proposals reviewed in today's CoECC meeting.

Thank you

Virgilio Gonzalez
vgonzalez3@utep.edu

From: Granda, Virginia D <granda@utep.edu>

Sent: Friday, January 7, 2022 16:28

To: Gonzalez, Virgilio <vgonzalez3@utep.edu>

Subject: UG Proposals Approved by our COECC

Good afternoon Dr. Gonzalez,

Attached are the undergraduate proposals that were approved by our COECC today.

Can you please reply to this email if you approve the proposals?

Best Regards,

Virginia



Virginia Granda-Becker

Coordinator for Undergraduate Studies and Academic Affairs

College of Engineering
The University of Texas at El Paso
500 W. University Ave
El Paso, TX 79968
Office: (915) 747-8011
www.utep.edu/engineering/eec

COURSE ADD

All fields below are required

College : Engineering

Department : Aerospace and Mechanical Engineering

Rationale for adding the course:

Needed for the new degree plan: Provides more flexibility in the education.

All fields below are required

Subject Prefix and # AERO 4329

Title (29 characters or fewer): Special Topics Aerostructures

Dept. Administrative Code : 1920

[CIP Code](#) 14.1901.00

Departmental Approval Required Yes No

Course Level UG GR DR SP

Course will be taught: Face-to-Face Online Hybrid

How many times may the course be taken for credit? (Please indicate 1-9 times): 1

Should the course be exempt from the "Three Repeat Rule?" Yes No

Grading Mode: Standard Pass/Fail Audit

Description (600 characters maximum):

Analysis and design of aero-structural components are covered. It may include computational analysis methods..

Contact Hours (per week): 3 Lecture Hours 0 Lab Hours 0 Other

Types of Instruction (Schedule Type): Select all that apply

- | | |
|---|--|
| <input checked="" type="checkbox"/> A Lecture | <input type="checkbox"/> H Thesis |
| <input type="checkbox"/> B Laboratory | <input type="checkbox"/> I Dissertation |
| <input type="checkbox"/> C Practicum | <input type="checkbox"/> K Lecture/Lab Combined |
| <input type="checkbox"/> D Seminar | <input type="checkbox"/> O Discussion or Review (Study Skills) |
| <input type="checkbox"/> E Independent Study | <input type="checkbox"/> P Specialized Instruction |
| <input type="checkbox"/> F Private Lesson | <input type="checkbox"/> Q Student Teaching |

Fields below if applicable

If course is taught during a part of term in addition to a full 16-week term please indicate the length of the course (ex., 8 weeks):

TCCN (Use for lower division courses) :

Prerequisite(s):		
Course Number/ Placement Test	Minimum Grade Required/ Test Scores	Concurrent Enrollment Permitted? (Y/N)
AERO 3323	D	N

Corequisite Course(s):

Equivalent Course(s):

Restrictions:	
Classification	
Major	

The University of Texas at El Paso
College of Engineering
Department of Aerospace and Mechanical Engineering
Syllabus

Course Prefix and Number: AERO 4329

Course Title: Special Topics in Aerostructures

Credit Hours: 3

Prerequisite Courses: AERO 3323 with a D or better.

Course Description:

Selected topics of current interest in Aeronautical and Astronautical Engineering related to the aerospace structures area

Learning Outcomes: (Describe the measurable learning outcomes for the course.)

- A. Outcomes vary by the instructor and the type of topic presented.
- B. Students will be able to solve problems in the area of a special topic.

Required Materials: (List any required or recommended readings and any materials that are considered required or essential for a course or program requirement.)

Dependent on the topic.

Course Policies: (Grading, attendance, academic integrity, etc.)

Dependent on the topic.

Course Statements: (Civility, disability, military, etc.)

Course Schedule: (List of topics to be covered by specified timeline. Indicate special target deadlines, such as examination days, last day to withdraw without penalty, and date and time of final exams.)

COURSE CHANGE FORM

All fields below are required

College : Engineering

Department : Aerospace and Mechanical Engineering

Rationale for changing the course:
Provides more MATH skills to students.

All fields below are required

Subject Prefix and number AERO 4335

Course Title Aerospace Structural Dynamics

Change	From	To
Prerequisite	MECH 2342 with a minimum grade of C or better	MATH 2326 with a minimum Grade of C or better
Prerequisite	MECH 2340 with a minimum grade of C or better	MECH 2340 with a minimum grade of C or better

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

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

FRESHMAN

Fall

MATH 1411	Calculus I ¹	4
MECH 1305	Graphic & Design Fundamentals ¹	3
PHYS 2420	Introductory Mechanics ¹	4
RWS 1301	Rhetoric & Composition I ¹	3
UNIV 1301	Seminar/Critical Inquiry ¹	3

Spring

CHEM 1105	Laboratory for CHEM 1305 ¹	1
CHEM 1305	General Chemistry ¹	3
HIST 1301	History of U.S. to 1865 ¹	3
MATH 1312	Calculus II ¹	3
MECH 1321	Mechanics I-Statics ¹	3
or CE 2315	Statics	
RWS 1302	Rhetoric & Composition 2 ¹	3

SOPHOMORE

Fall

HIST 1302	History of U.S. Since 1865 ¹	3
MATH 2313	Calculus III ¹	3
MECH 2322	Mechanics of Materials ¹	3
or CE 2334	Mechanics of Materials	
MECH 2331	Matl & Manufacturing Processes ¹	3

Design and Manufacturing Studio ^{1,8} 1

Science Elective * 4

Spring

CE 2326	Econ for Engrs & Scientists ¹	3
MATH 2326	Differential Equations ¹	3
MECH 2103	Engineering Computations ¹	1
MECH 2311	Intro to Thermal-fluid Sci ¹	3
MECH 2340	Mechanics II -Dynamics ¹	3
MECH 2342	Electro Mechanical Systems ¹	3
or EE 2350	Electric Circuits I	

JUNIOR

Fall

MECH 3312	Thermodynamics	3
MECH 3314	Fluid Mechanics	3
MECH 3352	Engineering Analysis II	3

POLS 2310	Introduction to Politics ¹	3
Laboratory Experience ²		1
Math Elective ^{1,3}		3
Spring		
COMM 1302	Business/Profession Comm ¹	3
MECH 3334	Mechanical Design	3
MECH 3345	System Dynamics	3
Laboratory Experience ²		1
Language, Philosophy, and Culture		3
Science/Math Elective ⁴		3
SENIOR		
Fall		
MECH 4315	Heat Transfer	3
Computational Elective ⁶		3
Design Elective Electro-Mechanical ⁵		3
Design Elective Solid Mechanics Area ⁵		3
Design Elective Thermal Fluid Area ⁵		3
Spring		
MECH 4366	Senior Design Project ⁷	3
POLS 2311	American Govern & Politics ¹	3
Design Elective Any Area ⁵		3
Design Elective Any Area ⁵		3
Creative Arts Elective		3
Notes:		
<ul style="list-style-type: none"> • Must be either CHEM 1306 with CHEM 1106, BIOL 1107 with 1305 or PHYS 2421 or by permission of advisor. 		
1 Grade of C or better required		
2 From the department approved list of Design and Project Experience I and II 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: BIOL 1306 , PHYS 2325 , PHYS 3351 , PHYS 4348 or any course listed in NOTE 3 (not already taken). Also, as per the UTEP core curriculum requirements two of your science classes must be in the same area (either BIOL, PHYS, OR CHEM).		
5. From the department approved list of Design Electives.		
6. From the department approved list of Computational Electives.		
7. Must be in the last full semester and have a 2.0 GPA or better in major.		
8. From the department approved list of Design and Manufacturing Studio courses.		
Total Hours		128

Course List

Code	Title	Hours
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING		
FRESHMAN		
Fall		
MATH 1411	Calculus I ¹	4
MECH 1305	Graphic & Design Fundamentals ¹	3
PHYS 2420	Introductory Mechanics ¹	4
RWS 1301	Rhetoric & Composition I ₁	3
UNIV 1301	Seminar/Critical Inquiry ¹	3
Spring		
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305 ¹	4
HIST 1301	History of U.S. to 1865 ¹	3
MATH 1312	Calculus II ¹	3
MECH 1321 or CE 2315	Mechanics I-Statics ¹ Statics	3
RWS 1302	Rhetoric & Composition ₂ ¹	3
SOPHOMORE		
Fall		
HIST 1302	History of U.S. Since 1865 ¹	3
MATH 2313	Calculus III ¹	3
MECH 2322 or CE 2334	Mechanics of Materials ¹ Mechanics of Materials	3
MECH 2331	Matl & Manufacturing Processes ¹	3
Design and Manufacturing Studio ^{1,8}		1
Science Elective *		4
Spring		
CE 2326	Econ for Engrs & Scientists ¹	3
MATH 2326	Differential Equations ¹	3
MECH 2103	Engineering Computations	1

MECH 2311	Intro to Thermal-fluid Sci 1	3
MECH 2340	Mechanics II -Dynamics	1 3
MECH 2342	Electro Mechanical Systems	1 3
or EE 2350	Electric Circuits I	
JUNIOR		
Fall		
MECH 3312	Thermodynamics	3
MECH 3314	Fluid Mechanics	3
MECH 3352	Engineering Analysis II	3
POLS 2310	Introduction to Politics	1 3
Laboratory Experience		1,2 1
Math Elective		3 3
Spring		
COMM 1302	Business/Profession Comm	1 3
MECH 3334	Mechanical Design	3
MECH 3345	System Dynamics	3
Laboratory Experience		2 1
Language, Philosophy, and Culture		1 3
Science/Math Elective		1,4 3
SENIOR		
Fall		
MECH 4315	Heat Transfer	3
Computational Elective		6 3
Design Elective Electro-Mechanical		5 3
Design Elective Solid Mechanics Area		5 3
Design Elective Thermal Fluid Area		5 3
Spring		
MECH 4366	Senior Design Project	7 3
POLS 2311	American Gover & Politics	1 3
Design Elective Any Area		5 3
Design Elective Any Area		5 3
Creative Arts Elective		1 3

Notes:

- Must be either [CHEM 1306](#) with [CHEM 1106](#), [BIOL 1107](#) with 1305 or [PHYS 2421](#) or by permission of advisor. •

Commented [AMS1]: AERO 3343 count towards Design Elective Electro-Mechanical area.

Commented [AMS2]: AERO 3323 and AERO 4313 count toward Elective Solid Mechanics area.

Commented [AMS3]: AERO 3312, AERO 4331, and AERO 4322 count toward Elective Thermal Fluid area.

- 1 Grade of C or better required
- 2 From the department approved list of Design and Project Experience I and II 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: [BIOL 1306](#), [PHYS 2325](#), [PHYS 3351](#), PHYS 4348 or any course listed in NOTE 3 (not already taken). Also, as per the UTEP core curriculum requirements two of your science classes must be in the same area (either BIOL, PHYS, OR CHEM).
5. From the department approved list of Design Electives.
6. From the department approved list of Computational Electives.
7. Must be in the last full semester and have a 2.0 GPA or better in major.
8. From the department approved list of Design and Manufacturing Studio courses.

Total Hours

128

BS Mechanical Engineering Degree Plan

Required Credits: 128

Code	Title	Hours
University Core Curriculum		
Complete the University Core Curriculum requirements.		42
Mechanical Engineering Designated Core (All courses require a grade of C or better.)		
CE 2326 Econ for Engrs & Scientists is a designated core course. It is required for graduation even if other course is used to fulfill the core. All Mechanical Engineering majors are encouraged to take CE 2326 to fulfill the core.		
Required Courses:		
CE 2326	Econ for Engrs & Scientists	3
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
MATH 1508	Precalculus ((Listed if completed, but not required))	3-5
or MATH 1310	Trigonometry and Conics	
or MATH 1411	Calculus I	
PHYS 2420	Introductory Mechanics	4
Mechanical Engineering (Other Requirements) (All courses require a grade of C or better.)		
Required Courses:		
MATH 1411	Calculus I	4
MATH 1312	Calculus II	3
MATH 2313	Calculus III	3

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Code	Title	Hours
MATH 2326	Differential Equations	3
Science Elective		
Select one of the following options:		4
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I ^c	
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306 ^c	
PHYS 2421	Introductory Electromagnetism	
MATH/Science Elective		
Select one of the following:		
BIOL 1306	Organismal Biology	
MATH 3323	Matrix Algebra	
MATH 3335	Applied Analysis I	
MATH 4329	Numerical Analysis	
MATH 4336	Applied Analysis II	
PHYS 2325	Survey of Modern Physics	
PHYS 3351	Analytical Mechanics I	
STAT 3320	Probability and Statistics	
MATH Elective		
Select one of the following:		
MATH 3323	Matrix Algebra	
MATH 3335	Applied Analysis I	

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Code	Title	Hours
MATH 4329	Numerical Analysis	
MATH 4336	Applied Analysis II	
STAT 3320	Probability and Statistics	
Mechanical Engineering Major		
Required Courses: ¹		
MECH 1305	Graphic & Design Fundamentals ^c	3
MECH 1321 or CE 2315	Mechanics I-Statics ^c Statics	3
MECH 2103	Engineering Computations ³	1
MECH 2311	Intro to Thermal-fluid Sci ^c	3
MECH 2322 or CE 2334	Mechanics of Materials ^c Mechanics of Materials	3
MECH 2331	Matl & Manufacturing Processes ^c	3
MECH 2340	Mechanics II - Dynamics ^c	3
MECH 2342 or EE 2350	Electro Mechanical Systems ^c Electric Circuits I	3
MECH 3312	Thermodynamics ³	3
MECH 3314	Fluid Mechanics ³	3
MECH 3334	Mechanical Design ³	3
MECH 3345	System Dynamics ³	3

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Code	Title	Hours
MECH 3352	Engineering Analysis II ³	3
MECH 4315	Heat Transfer ³	3
MECH 4366	Senior Design Project ^{2,3}	3
Select one of the following:		
MECH 2131	Manufacturing Engineering Lab ^c	
MECH 2132	Additive Manufacturing Lab ^c	
MECH 2133	Metal Casting Lab ^c	
MECH 2134	Intelligent Manufacturing Lab	
Select two of the following:		
MECH 3103	Mechatronics Lab ³	
MECH 3113	Thermo-fluid Lab ³	
MECH 3123	Solid Mechanics Lab ³	
Select one of the following:		
MECH 4326	Finite Element Analysis ³	
MECH 4330	Dynamic Systems Simulation ³	
MECH 4392	Special Topics in Computation ³	
Select five of the following (minimum of one from each area):		
Solid Mechanics Area		
AERO 3323	Aerospace Structure I	
AERO 4313	Aerospace Structure II	

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Code	Title	Hours
MECH 4336	Principles of Engr Design ³	
MECH 4395	Special Topics in Mech. Engr. ³	
Thermal Fluid Area		
AERO 3312 AERO 4331 MECH 4316	Aerodynamics I Aerodynamics II Thermal System Design ³	
MECH 4394	Special Topics in Therm Fluid ³	
Electro-Mechanical Area		
AERO 3343	Aerospace Dynamics and Controls	
MECH 4332	MECH Comp App Vision Robotics	
MECH 4334	Mechanical Systems Control	
MECH 4345	Comm & Mech Sensor Protocols	
MECH 4346	Mechatronics ³	
MECH 4393	Special Topics in Elect-Mech ³	
Total Hours		128

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Deleted: [AERO 3343](#)

Deleted: Aerospace Dynamics and Controls

C Course require a grade of C or better.

¹ All institutional courses appearing in this area count towards the major GPA with a minimum of 2.0

² Must be in the last full semester and have a 2.0 GPA or better in major.

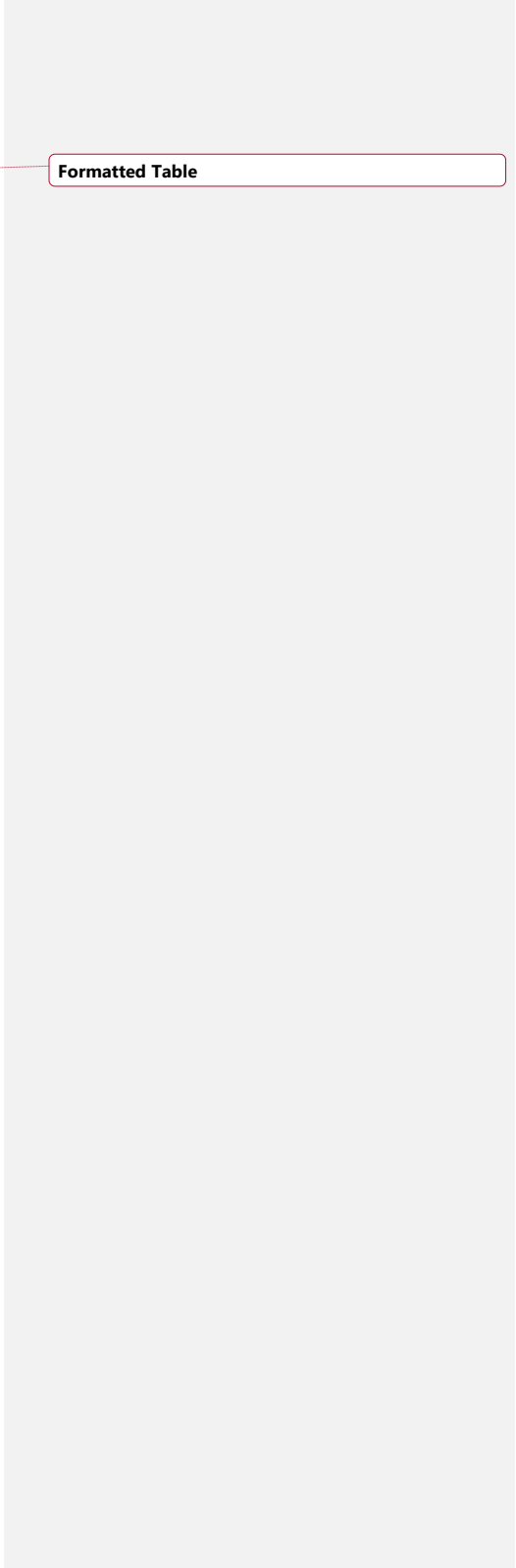
Code

Title

Hours

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³ Course requires grade of D or better



University of Texas at El Paso

Mechanical Engineering Dept.

Phone: (915) 747-5450 <http://me.utep.edu/> Email: MEAdvising@utep.edu

2021 B.S. in Mechanical 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	2420	Physics I (MATH 1411 is CO requisite)	4	MATH	1312	Calculus II + (MATH 1411+)	3
	CS	1310	Component Area (CS 1310, CS 1320, UNIV 1301, or EL 1301)+	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
	MECH	2331	Mat’ls and Manufacturing Processes + (CHEM 1305+)	3	MECH	2103	Engineering Computations (MATH 1312+)	1
			Design and Manufacturing Studio + (MECH 1305+) (see NOTE 8)	1	MECH	2342	Electro Mechanical Systems + (MATH 1312+)	3
	HIST	1302	History of US since 1865	3	CE	2326	Engineering Economics +	3
			Science Elective + (see NOTE 1)	4	MATH	2326	Differential Equations	3
			17				16	
Junior			Laboratory Experience (see NOTE 2)	1			Laboratory Experience (see NOTE 2)	1
	MECH	3352	Engineering Analysis II)(MATH 2326+)	3	POLS	2310	Introduction to Politics +	3
	MECH	3312	Thermodynamics (MECH 2311+)	3	MECH	3345	System Dynamics (MECH 2340+, MECH 2342+)	3
	MECH	3314	Fluid Mechanics (MECH 2311+)	3	MECH	3334	Mechanical Design (MECH 2322+, MECH 2331+)	3
	COMM	1302	Business and Professional Communication +	3			Language, Philosophy, and Culture	3
	MATH		Math Elective (see NOTE 3)	3			Science/Math Elective + (see NOTE 4)	3
				16				16
Senior			Design Elective Solid Mechanics Area (see NOTE 5)	3	MECH	4366	Senior Design (CE 2326 +,MECH 3334, see NOTE 7)	3
			Design Elective Thermal Fluid Area (see NOTE 5)	3			Design Elective Any Area (see note 5)	3
	MECH	4315	Heat Transfer (MECH 3312, MECH 3314)	3			Design Elective Any Area (see note 5)	3
			Computational Elective (see note 6)	3	POLS	2311	American Government and Politics	3
			Design Elective Electro-Mechanical (see NOTE 5)	3			Creative Arts	3
			15				15	
Total 128 Credit hrs								

1 Design and Manufacturing Studio			
MECH	2131	Manufacturing Laboratory (MECH1305 +)	1
MECH	2132	Additive Manufacturing Laboratory (CHEM 1305 +)	1
MECH	2133	Metal Casting Laboratory (CHEM 1305 +)	1
MECH	2134	Intelligent Manufacturing (MECH 1305 +)	1
2 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

3 Design Elective Solid Mechanics Area			
MECH	4336	Principles of Engineering Design (MECH 3334)	3
MECH	4395	Special Topics in Solid Mechanics Area (MECH 3334)	3
MECH	4370	Pre-Professional Experience	3
AERO	3323	Aerospace Structure I	3
AERO	4313	Aerospace Structure II	3

4 Design Elective Thermal Fluid Area			
MECH	4316	Thermal System Design (MECH 4315)	3
MECH	4394	Special Topics in Thermal Fluid Area (MECH 3312+)	3
AERO	3312	Aerodynamics I (MECH 2311+)	3
AERO	4331	Aerodynamics II	3
AERO	4322	Propulsion	3

5 Design Elective Electro-Mechanical Area			
MECH	4346	Mechatronics (MECH 3345)	3
MECH	4332	Mechanical Computational Applications in Vision and Robotics (MECH 3345)	3
MECH	4334	Mechanical System Control (MECH 3345)	3
MECH	4345	Communications and Mechanical Sensor Protocols (MECH 3345)	3
MECH	4393	Special Topics in Electro-Mechanical (MECH 3345)	3
AERO	3343	Aerospace Dynamics and Controls	3

6 Computational Elective			
MECH	4326	Finite Element Analysis (MECH 3352, MECH 3334)	3
MECH	4328	Intro to LabVIEW (MECH 3352)	3
MECH	4330	Dynamic Systems Simulation (MECH 3345, MECH 3352)	3
MECH	4392	Special Topics in Computation	3

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

1. Must be either CHEM 1306 with CHEM 1106, BIOL 1107 with 1305, or PHYS 2421 or by advisor's permission.
2. From the department-approved list of Design and Project Experience I and II courses.
3. Selected from MATH 3323, 3335, 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 BIOL 1306, PHYS 2325, PHYS 3351, PHYS 4348, or any course listed in NOTE 3 (not already taken). As per the UTEP core curriculum requirements, two of your science classes must be in the same area (BIOL, PHYS, OR CHEM).
5. From the department- approved list of Design Electives.
6. From the department-approved list of Computational Electives.
7. Must be in the last full semester and have a 2.0 GPA or better in major.
8. From the department-approved list of Design and Manufacturing Studio courses.
9. Students who will be engaged with internship/job training/co-operative work-study in a private or federal science and or engineering organization. A maximum of 3.0 credit hours can be counted towards a technical elective for graduation requirements. This course will be available as MECH 4370 "Pre Professional Experience" From Spring 2012. Approval from the Department is necessary for MECH 4370. Application form is available online or in the Departmental office.

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

BS Aerospace and Aeronautical Engineering(Starting with Calculus)

Code	Title	Hours
BACHELOR OF SCIENCE IN AEROSPACE AND AERONAUTICAL ENGINEERING		
FRESHMAN		
Fall		
MECH 1305	Graphic & Design Fundamentals +	3
RWS 1301	Rhetoric & Composition I +	3
MATH 1411	Calculus I +	4
PHYS 2420	Introductory Mechanics	4
UNIV 1301	Seminar/Critical Inquiry +	3
Spring		
MECH 1321	Mechanics I-Statics +	3
HIST 1301	History of U.S. to 1865 +	3
RWS 1302	Rhetoric & Composition 2 +	3
MATH 1312	Calculus II +	3
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305 +	4
SOPHOMORE		
Fall		
MECH 2322	Mechanics of Materials +	3
MATH 2313	Calculus III +	3
AERO 2331	Aerospace Materials +	3

Code	Title	Hours
AERO 2131	Aerospace Materials Lab +	1
HIST 1302	History of U.S. Since 1865 +	3
Science Elective +,1		4
Spring		
MECH 2340	Mechanics II -Dynamics +	3
MECH 2311	Intro to Thermal-fluid Sci +	3
MECH 2103	Engineering Computations +	1
MECH 2342	Electro Mechanical Systems +	3
CE 2326	Econ for Engrs & Scientists +	3
MATH 2326	Differential Equations +	3
JUNIOR		
Fall		
Laboratory Experience 2		1
MECH 3352	Engineering Analysis II	3
AERO 3312	Aerodynamics 1	3
Concentration Course I 5		3
POLS 2310	Introduction to Politics +	3
Math Elective +,3		3
Spring		
Laboratory Experience 2		1
COMM 1302	Business/Profession Comm +	3

Code	Title	Hours
AERO 3343	Systems Modelling and Control	3
AERO 3323	Aerospace Structures I ⁵	3
Concentration Course II ⁵		3
Science/Math Elective ⁺⁴		3
SENIOR		
Fall		
Aero concentration III ⁵		3
AERO 4322	Aerospace Propulsion	3
Technical Elective ⁶		3
AERO 4365	Aerospace Systems Engineering	3
Humanities Electives ⁺		3
Spring		
AERO 4366	Aerospace Senior Design	3
AERO 4364	Aerospace Communications	3
Technical Elective ⁶		3
POLS 2311	American Gover & Politics	3
Visual and Performing Art Elective		3

Commented [AMS1]: AERO 4329 consider towards the Technical Elective

Notes:

+Grade of C or better required

1. Must be either [CHEM 1306](#) with [CHEM 1106](#), [PHYS 2421](#) or by permission of advisor.

Code	Title	Hours
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). Also, as per the UTEP core curriculum requirements two of your science classes must be in the same area (either PHYS, OR CHEM).		
5. Must take at least three classes from one aerospace concentration area.		
6. Two technical electives selected from any MECH or AERO 3XXX or 4XXX courses. At least one elective must be at the 4XXX level.		
Total Hours		128
Course List		

BS in Aerospace and Aeronautical Engineering

Degree Plan

Code	Title	Hours
University Core Curriculum(All courses require a grade of C or better.)		
Complete the University Core Curriculum requirements.		42
Aerospace Engineering (Other Requirements) (All courses require a grade of C or better.)		
Required Courses: Some of these are included in the core.		
MATH 1411	Calculus I	4
MATH 1312	Calculus II	3
MATH 2313	Calculus III	3
MATH 2326	Differential Equations	3
CHEM 1105	Laboratory for CHEM 1305	1
CHEM 1305	General Chemistry	3
PHYS 2420	Introductory Mechanics	4
Select one of the following:		3
MATH 3323	Matrix Algebra	
MATH 3335	Applied Analysis I	
MATH 4326	Linear Algebra	
MATH 4329	Numerical Analysis	
MATH 4336	Applied Analysis II	
STAT 3320	Probability and Statistics	
Select one of the following:		4
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	

Code	Title	Hours
PHYS 2421	Introductory Electromagnetism	
Select one of the following:		3
PHYS 2325	Survey of Modern Physics	
PHYS 3351	Analytical Mechanics I	
PHYS 4348		
Aerospace Engineering Major		
Required Courses:		
MECH 1305	Graphic & Design Fundamentals °	3
MECH 1321	Mechanics I-Statics °	3
MECH 2103	Engineering Computations °	1
MECH 2311	Intro to Thermal-fluid Sci °	3
MECH 2322	Mechanics of Materials °	3
MECH 2340	Mechanics II -Dynamics °	3
MECH 2342	Electro Mechanical Systems °	3
MECH 3352	Engineering Analysis II	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

Code	Title	Hours
MECH 3103	Mechatronics Lab	
MECH 3113	Thermo-fluid Lab	
MECH 3123	Solid Mechanics Lab	
Concentration Electives: Must take 3 from one Concentration ¹		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	
AERO 4355	Space Mission Design	
AERO 4359	Special Topics in Astronautics	
Technical Electives ²		6
Total Hours		128

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C Course requires a grade of C or better

1 Must declare a concentration and take three classes from the declared concentration area

2 Must be an aerospace class from outside your declared aerospace concentration area or from any MECH 4XXX course. [AERO 4329 counts towards Technical electives](#)

3 Must be in the last full semester and have a 2.0 GPA or better in major.

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	2420	Physics I (MATH 1411 is CO requisite)	4	MATH	1312	Calculus II + (MATH 1411+)	3
	UNIV	1301	Introduction to Engineering can be taught in a specific section. +	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	Engineering Economics +	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 (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	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 2421, or by permission of advisor.
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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). Also, as per the UTEP core curriculum requirements, two of your science classes must be in the same area (either PHYS ,OR CHEM).
5. Must take three classes from any single aerospace concentration
6. Must be a class from a different concentration area