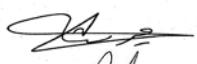
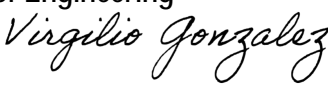


UNDERGRADUATE CURRICULUM CHANGE MEMO

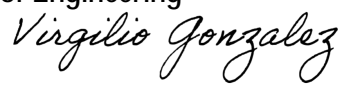
Date: May 25, 2022

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 

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: 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 |
| | | |
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| | | |

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) | | |

CE 2326

| 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