FLORIDA STATE UNIVERSITY SIGNATURE PAGE PROPOSAL FOR A COMBINED BACHELOR'S/MASTER'S PATHWAY

COLLEGE NAME: FAMU-FSU College of Engineering

DEPARTMENT NAME (if applicable): Mechanical & Aerospace Engineering

BACHELOR'S DEGREE: (incl. C.I.P. Code and Degree Type): BS in Mechanical Engineering (14.1901)

MASTER'S DEGREE: (incl. C.I.P. Code and Degree Type): MS in Aerospace Engineering (14.0201)

NAME OF COMBINED PATHWAY: BS-ME / MS-AE pathways Program

CONTACT PERSON: Chiang Shih

COMBINED PATHWAY DIRECTOR (print name and email):

Chiang Shih, shih@eng.famu.fsu.edu

APPROVALS:

W.S. Oates	9/18/2025
Department/School Curriculum Committee	Date
Rajan Kumar	9/18/2025
Department Chair/Director	Date
Michelle Paddeberg	11/17/2025
College Curriculum Committee	Date

Michelle Fabbrey Academic Dean	11/17/2025 Date
UPC (Dean of Undergraduate Studies)	Date
Dean of The Graduate School (or designee)	Date
VP for Faculty Development and Advancement	Date
Provost and Executive Vice President for Academic Affairs	Date

*If the composition of the combined pathway includes two degree programs from two separate departments or colleges, then please attach two separate signature pages showing the approvals from the different units.

Prior to routing the combined pathway proposal to the Undergraduate Policy Committee (UPC) for signatures, it should be submitted to Mr. James Beck in The Graduate School (jpbeck@fsu.edu) and Dr. Amy Guerette in the Office of Faculty Development and Advancement (aguerette@fsu.edu) for review.

Proposal to establish a combined degree program of Bachelor of Science in Mechanical Engineering (BS-ME) and Master of Science in Aerospace Engineering (MS-AE): The BS-ME / MS-AE Pathway program.

COMBINED PATHWAY PROPOSAL

Combined Bachelor's/Master's Pathways provided academically talented students an opportunity to complete a bachelor's and a master's degree program. These partially structured pathways allow for up to 12 graduate credit hours to be shared with, or double-counted toward an undergraduate degree program, as long as that double-counting is considered appropriate by the faculty curriculum committees and academic advisors reflected on the proposal signature page.

PROPOSAL

Purpose and Justification of establishing the Combined Pathway:

In recent years, industry needs people who not only have a sound education in mathematics, basic sciences, and engineering science, but also who have knowledge and experience to provide solutions for real world, product-driven problems. These increasing demands placed on the undergraduate engineering curriculum could not be satisfied within the parameters of a traditional four-year undergraduate curriculum. The five-year Mechanical Engineering (ME) BS-MS Pathway program was created to satisfy the industry needs by coordinating the curriculum in the fourth undergraduate year with an additional fifth graduate year. Annually, about 20 ME students have enrolled and graduated in the program since its establishment in 2019. Starting fall 2025, ME has established an aerospace engineering (AE) graduate degree program. Traditionally, aerospace engineering is a specialized discipline within the broader mechanical engineering field. Therefore, it is logical for many ME BS students to pursue AE graduate degrees to focus on aerospace-specific studies in preparation for their future careers. It is proposed to model the existing ME BS-MS Pathway program to establish the BS-ME/MS-AE Pathway program.

Admission Criteria and Operating Procedures:

Students in the BS-ME/MS-AE program will be exposed to the same scope and level of subjects as those in the regular AE MS program following a ME BS degree, and it is expected that they will have equivalent qualifications and opportunities for advanced graduate study programs, either in AE or ME. Successful completion of the fourth year of the five-year BS/ME-MS/AE curriculum will give the student enough credit hours and breadth of subject matter to satisfy university requirements for the ME MS degree.

Academically, students will learn in-depth science and engineering fundamentals through traditional lectures/lab learning. Professionally, they can integrate this experience with industrial practices and design skills through project-based learning and/or internship during summers. At

the completion of the BS-ME\MS-AE program, they will graduate with broader knowledge in engineering as well as focused aerospace-specific curriculum, while providing immediate employment qualifications and life-time career capabilities.

Students are recruited in the Spring semester of their junior year. Special group and/or individual information sessions will be arranged for all interested students before they submit their application packages. The admission standard is based on the following criteria: (1) GPA of 3.2 or higher; (2) successful completion of the junior-level core ME courses, and (3) selection of aerospace-relevant technical electives (to be double counted for graduate credits) during senior year. More emphasis is placed on the engineering GPA (by excluding pre-engineering and non-technical courses taken during early academic years). Applications are reviewed by a committee consisting of the BS-MS coordinator, Graduate Committee Chair and the Department Chair. Provisional admission to the MS/AE program will be granted to selected students who satisfy the academic criteria.

Subsequently, students will be advised by the BS-MS coordinator and the graduate program coordinator after the preliminary admission. They will take up to four graduate-level (5000 or higher) courses during their Senior years while maintaining a 3.0 or better GPA. At least three of these courses (a total of 9 credit hours) would have to be Aerospace Engineering courses while one course could be from outside AE or ME, provided it is approved by the graduate committee chair. The same set of four courses could be used to fulfill their undergraduate Technical Electives requirement (in the spirit of double-counting). They will apply for graduate school during the Spring semester of their Senior year with required credentials, before being formally admitted into the MS program in the summer term, immediately after receiving their BS-ME degree.

They will return to school in the following Summer, Fall and/or Spring semesters to complete their MS-AE degree requirements (taking 6 graduate-level courses) for a total of 18
credit hours (or more, if they have not taken the maximum allowable 4 graduate-level courses during their Senior year). In all, BS-ME/MS-AE Pathway students will complete 30 graduate credit hours with a maximum of 12 double counting credit hours toward their BS-ME degree requirements (replacing four Technical Elective courses).

Curriculum:

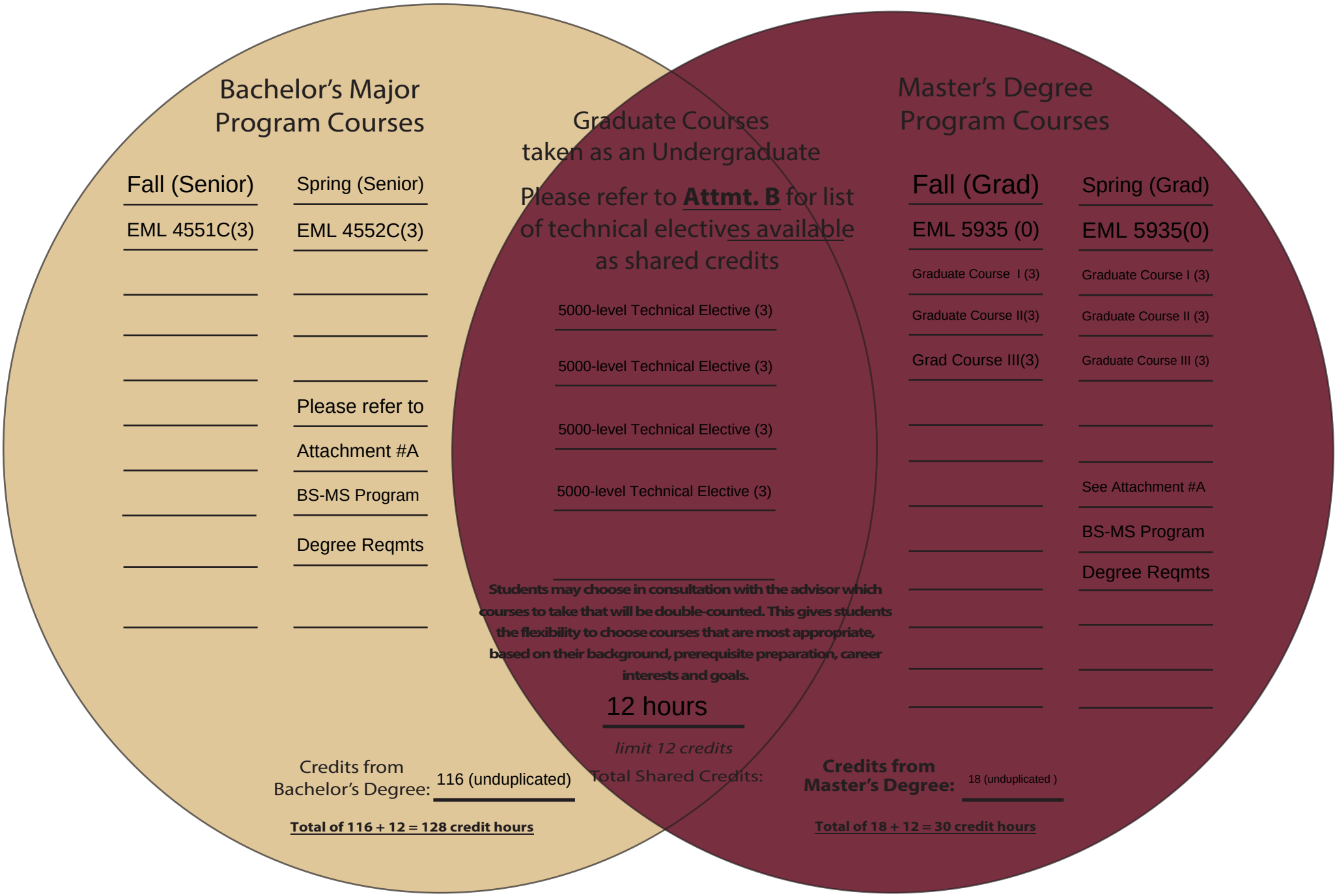
BS-ME requirements: The BS-ME/MS-AE program allows double counting up to 12 credit hours. Therefore, the students will satisfy all BS-ME requirements by completing 128 hours (with 12 double-counting graduate-level courses) to satisfy ME ABET requirements within their four years of undergraduate study. They will take all required ME core undergraduate courses and the graduate-level courses will replace the four required technical electives. Therefore, they will fulfill all BS-ME requirements as compared to their peers.

MS-AE requirements: They have taken up to four graduate-level courses (with a minimum of three aerospace-relevant) during their Senior year. They will return to school in the following

Summer, Fall and/or Spring semesters to complete their MS-AE degree requirements (taking 6 additional MS-level courses) for a total of 18 credit hours (or more, if they have not taken 4 graduate-level courses earlier). They will have taken 30 hours of graduate-level courses while maintaining 3.0 or better GPA.

In all, BS-ME/MS-AE students will complete 30 graduate-level credit hours with a maximum of 12 credit hours be double counted toward their BS degree requirements.

Combined Bachelor's/Master's Pathway



Total Combined Pathway Credit Hours: 146 credit hours

ATTACHMENT - A

BS/ME-MS/AE Pathway Program Degree Requirements

The BS/ME-MS/AE program is a combined undergraduate (BS in ME) - graduate program (MS in AE). This program is designed for five years of full-time study. It provides students with a unique opportunity to combine advanced undergraduate and graduate studies in mechanical and aerospace engineering with practical, real-world, product-oriented experience in the engineering of mechanical and aerospace systems.

The BS/ME-MS/AE program is designed for admission from within the College of Engineering student body. Well-qualified students, who are expected to have a GPA of 3.2 or better in engineering studies, are invited to apply for the program during the spring semester of their third year in the College. Qualified students may complete the online application form.

Undergraduate Curriculum (Senior Year)

Fall Semester

- EML 4551C - Senior Design Project I (3)
- Graduate Course or Undergraduate Technical Elective (3)
- Graduate Course or Undergraduate Technical Elective (3)
- Other Undergraduate Courses required for BS degrees (as needed)

Spring Semester

- EML 4552C - Senior Design Project II (3)
- Graduate Course or Undergraduate Technical Elective (3)
- Graduate Course or Undergraduate Technical Elective (3)
- Other Undergraduate Courses required for BS degrees (as needed)

Registering for Graduate Courses

To register for a graduate course, students must complete a Request to Take Graduate Courses form. The form is available in the Registrar's Office. The form must be submitted to the university no later than the third day of classes. Students must earn a 'B' grade or better in each graduate level course taken to transfer to fulfill MS/AE degree requirements.

Admission to the Graduate Program

BS/ME-MS/AE students must apply for admission to the graduate program. The application is available online at https://admissions.fsu.edu/gradapp/. Students must apply for the summer term. Applications are due **March 1**. Letters of recommendation are not required for BS/ME-MS/AE students. However, students should submit all other required documents. See the Graduate Admissions page for more details.

GRE

The Revised GRE is required for admission to graduate program. BS-MS students should take the GRE no later than February 15 to meet the March 1 application deadline.

MS/AE Graduate Curriculum

All BS/ME-MS/AE students must take the following distribution of courses for a total of thirty (30) credit hours. Up to twelve (12) of the thirty (30) credit hours may be taken during the senior year of the student's BS/ME degree program. Only graduate-level courses (5000 or above) can be double-counted as both senior technical electives for BS/ME and graduate credits for MS/AE degrees requirements. The remaining graduate credit hours are taken as part of the MS/AE program. The following is the standard curriculum sequence for BS/ME-MS/AE Pathway students. Students should not deviate from this sequence without the approval of their faculty advisor or the BS/ME-MS/AE Program Coordinator.

Graduate/Undergraduate Credits	**BS/ME (senior year)**		**MS/AE (first year)**	
Courses	**Fall**	**Spring**	**Fall**	**Spring**
EML 4551 Senior Design Project I (3)	○			
Graduate Course I (3)	⊙			
Graduate Course II (3)	⊙			
Other Undergraduate Courses (as needed)	○			
EML 4551 Senior Design Project II (3)		○		
Graduate Course III (3)		⊙		
Graduate Course IV (3)		⊙		
Other Undergraduate Courses (as needed)		○		
EML 5060 Analysis in Mechanical Engineering (3)			■	
Graduate Course VI (3)			□	
Graduate Course VII (3)			□	
EML 5935 Graduate Seminar (0)			■	
EAS 5102 Fundamentals of Aerodynamics (3)				■
Graduate Course IX (3)				□
Graduate Course X (3)				□
EML 5935 Graduate Seminar (0)				■

○ Undergraduate courses – core or electives as required to fulfill undergraduate BS/ME degree.
⊙ Graduate courses – Up to 12 credits can be double counted as both MS/AE credits and undergraduate technical electives. Only 1 such double counted course can be selected outside the aerospace-centric courses as listed in attachment B.
■ Graduate core courses for MS/AE
□ Graduate courses for MS/AE

BS/ME-MS/AE Courses (30 credit hours)

Double-Counted Graduate Courses taken from BS/ME-MS/AE Program (up to 12 credit hours)

Core Courses (6 credit hours)
There are two core courses for the BS/ME-MS/AE Pathway program.

1. EML 5060, Analysis in Mechanical Engineering (expected to be re-named as Analysis in Mechanical & Aerospace Engineering).
2. EAS 5102 Fundamentals of Aerodynamics. For students who have taken this course during the BS/ME year, an alternative class selected from the following table shall be chosen as a replacement.

Course #	Title
EML 5710	Introduction to Gas Dynamics
EML 5422	Fundamentals of Propulsion Systems
EML 5709	Fluid Mechanics Principles and Applications

Mechanical and Aerospace Engineering Courses (9 credit hours)
Select 3 graduate-level courses in ME/AE Engineering. No DIS, Supervised Research (SR) or any other S/U graded course.

Electives (3 credit hours)
Select 1 graduate-level courses in engineering, mathematics, and/or any science discipline.

Attachment B.

List of aerospace-centric graduate-level courses available for BS-MS students to take as technical electives as double counting courses for BS/ME-MS/AE degree requirements. More courses will be listed when new aerospace graduate courses are developed in the future.

Courses	#	TITLE	Cr
EGM	5444	Advanced Dynamics	3
EML	5060	Analysis in Mechanical Engineering (Part I)	3
EML	5061	Analysis in Mech Eng. (Part II)	3
EML	5152	Fundamentals of Heat Transfer	3
EML	5311	Design & Analysis of Control Systems	3
EML	5317	Advanced Design & Analysis of Control Systems	3
EML	5537	Design using FEM	3
EGM	5611	Continuum Mechanics	3
EML	5709	Fluid Mechanic Principles with Selected Applications	3
EML	5710	Intro to Gas Dynamics	3
EML	5930	Fluid Structure Interactions	3
EGM	5653	Theory of Elasticity	3
EML	5042	Modeling and Simulation	3
EAS	5102	Fundamentals of Aerodynamics	3
EML	5930	Random Data Measurement & Analysis	3
EML	5930	Experimental Methods and Advanced Flow Diagnostics	3
EML	5930	Computational Fluid Dynamics for Incompressible Flow	3
EGM	6845	Turbulent Flows	3
EGM	5810	Viscous Fluid Flows	3
EML	5422	Fundamentals of Propulsion Systems	3
EML	5930	Introduction to Hypersonic Flows	3
EML	5930	Introduction to Physical Acoustics	3
EML	5930	Introduction to Bayesian Uncertainty Analysis for Engineers	3