PROGRESSIVE DEGREE PROGRAM
COURSE PLAN TEMPLATE

USC SCHOOL	Viterbi School of Engineering
ACADEMIC DEPARTMENT	Aerospace and Mechanical Engineering
GRADUATE PROGRAM	AME - Fluid & Solid Mechanics
POST CODE	1221
TERM EFFECTIVE DATE	Spring 2021

PROGRAM DESCRIPTION
A brief description of the graduate program.

The program prepares students for professional careers in engineering companies that develop products using computational tools of fluid and solid mechanics. The program also provides the necessary background for pursuing higher degrees, Engineer and PhD, in aerospace and mechanical engineering with specializations in computational fluid mechanics, computational solid mechanics and computational heat transfer. The degree course work provides a necessary background in basic aerospace and mechanical engineering disciplines (solid mechanics, fluid mechanics, heat transfer), engineering mathematics and numerical methods. The advanced computational technical electives provide practical examples using existing numerical programs to simulate structures, heat transfer and fluid flows as well as commercial packages.

COMMON BACHELOR DEGREE PROGRAM PATHWAYS
A list of common bachelor's degrees that undergraduate students pursue in advance of pursuing a progressive degree option with this graduate program. Some programs are restricted to certain majors while others are open to all students.

Aerospace Engineering B.S.	Biomedical Engineering B.S
Mechanical Engineering B.S.	Civil Engineering B.S.
Astronautical Engineering B.S.	Physics B.S.
Open to all students if they fulfill course deficiencies	

PREPARATORY UNDERGRADUATE COURSES
A list of courses at the undergraduate level that prepare students for the graduate program. Required coursework is listed first, followed by recommended courses. If not applicable, this section will be blank.

Dept. Prefix - Course #	Course Title	Required or Recommended	Units
AME 204	Strength of Materials	Recommended	3
AME 301	Dynamics	Recommended	3
AME 309	Dynamics of Fluids	Recommended	4
AME 310	Engineering Thermodynamics I	Recommended	3
AME 331	Heat Transfer	Recommended	3

AME 305 or AME 408	Mechanical Design or Computer-Aided Design of Mechanical Systems	Recommended	3
AME 451	Linear Control Systems I	Recommended	3
Math 125	Calculus I	Recommended	4
Math 126	Calculus II	Recommended	4
Math 226	Calculus III	Recommended	4
Math 245	Mathematics of Physics and Engineering I	Recommended	4
PHYS 151	Mechanics and Thermodynamics	Recommended	4
PHYS 152	Electricity and Magnetism	Recommended	4
PHYS 153	Optics and Modern Physics	Recommended	4

UNDERGRADUATE COURSES USED TO REDUCE GRADUATE LEVEL UNITS

A list of undergraduate level courses that may be used to reduce the number of graduate level units required for the graduate program. If there are none, that is specified instead.

Dept. Prefix - Course #	Course Title	Units
	None	

CORE GRADUATE PROGRAM REQUIREMENTS (24 units required)

A list of all required graduate courses for the graduate program. None of these courses may be used toward satisfying undergraduate degree requirements.

If special exceptions for any of these courses are made by the academic department, the course # is marked with an asterisk (*) and the exception is explained in the "Department Notes" section at the end of this course plan template.

Dept. Prefix - Course #	Course Title	Units
AME 525	Engineering Analysis	4
AME 509 or CE 507	Applied Elasticity or Mechanics of Solids	4
AME 530a	Dynamics of Incompressible Fluids	4
AME 535a	Introduction to Computational Fluid Mechanics	3
CE 529	Finite Element Analysis	4
Core Elective in Fluid/Solid Dynamics or Numerical Methods*	See pre-approved list	3-4
*Viterbi Elective	Course offered by Viterbi Department	1-2

PRE-APPROVED ELECTIVE COURSEWORK

Elective coursework is approved at the discretion of the academic department. Note the following details about the total number and units required of elective coursework.

0-2	**TOTAL ELECTIVE UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE**
1-2	**TOTAL ELECTIVE UNITS REQUIRED FOR THE PROGRESSIVE GRADUATE DEGREE**

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TOTAL UNIT COUNTS AND REQUIRED GRADUATE UNITS

27	**TOTAL UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE**
3	**TOTAL GRADUATE UNITS THAT MAY BE WAIVED (IF ANY)**
18	**MINIMUM NUMBER OF GRADUATE UNITS THAT MUST BE AT THE 500 LEVEL OR ABOVE**

NOTES FROM THE DEPARTMENT

This section highlights any unique considerations, exceptions, or requirements for the graduate program. If a program has specific restrictions (courses, majors, etc.), they are detailed below.

Core elective in Fluid/Solid Dynamics or Numerical Methods are chosen from the list found here: https://ame.usc.edu/academics/ms-in-aerospace-mechanical-engineering/

Viterbi Elective is any course offered by Viterbi. Math or Physics courses also accepted.

Kelly Goulis	April 7, 2021
Authorizing Dean's Name	**Date Approved**

Senior Associate Dean, Viterbi School of Engineering

Authorizing Dean's Title