PROGRESSIVE DEGREE PROGRAM
COURSE PLAN TEMPLATE

USC SCHOOL
Viterbi School of Engineering

ACADEMIC DEPARTMENT
Aerospace and Mechanical Engineering

GRADUATE PROGRAM
Mechanical Engineering

POST CODE
561

TERM EFFECTIVE DATE
Spring 2021

PROGRAM DESCRIPTION
A brief description of the graduate program.

The Master of Science in Mechanical Engineering prepares the student to practice engineering at an advanced level in a specialization within mechanical engineering and to recognize the benefit of solving problems using expertise from other engineering disciplines. Students improve their skills in setting up and solving problems by using contemporary tools and leveraging interaction with peers.

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.

<table>
<thead>
<tr>
<th>Aerospace Engineering B.S.</th>
<th>Biomedical Engineering B.S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Engineering B.S.</td>
<td>Civil Engineering B.S.</td>
</tr>
<tr>
<td>Astronautical Engineering B.S.</td>
<td>Physics B.S.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Dept. Prefix - Course #</th>
<th>Course Title</th>
<th>Required or Recommended</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 204</td>
<td>Strength of Materials</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>AME 301</td>
<td>Dynamics</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>AME 309</td>
<td>Dynamics of Fluids</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>AME 310</td>
<td>Engineering Thermodynamics i</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>AME 331</td>
<td>Heat Transfer</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>AME 305 or AME 408</td>
<td>Mechanical Design or Computer-Aided Design of Mechanical Systems</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>AME 451</td>
<td>Linear Control Systems I</td>
<td>Recommended</td>
<td>3</td>
</tr>
<tr>
<td>Math 125</td>
<td>Calculus I</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>Math 126</td>
<td>Calculus II</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>Math 226</td>
<td>Calculus III</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>Math 245</td>
<td>Mathematics of Physics and Engineering I</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 151</td>
<td>Mechanics and Thermodynamics</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 152</td>
<td>Electricity and Magnetism</td>
<td>Recommended</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 153</td>
<td>Optics and Modern Physics</td>
<td>Recommended</td>
<td>4</td>
</tr>
</tbody>
</table>
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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.

<table>
<thead>
<tr>
<th>Dept. Prefix - Course #</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Dept. Prefix - Course #</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 525</td>
<td>Engineering Analysis</td>
<td>4</td>
</tr>
<tr>
<td>AME 500-lvl elective*</td>
<td>Graduate course offered by AME department</td>
<td>11</td>
</tr>
<tr>
<td>Viterbi Elective*</td>
<td>Graduate course offered by Viterbi</td>
<td>9</td>
</tr>
</tbody>
</table>

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.

23  TOTAL ELECTIVE UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE
20  TOTAL ELECTIVE UNITS REQUIRED FOR THE PROGRESSIVE GRADUATE DEGREE

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.

- 500-level courses cross-listed with AME (ex: SAE 549) can satisfy the requirement for 11 units of AME 500-level electives
- Of the 9 units of Viterbi Electives required, a maximum 6 units of 400-level coursework is accepted

<table>
<thead>
<tr>
<th>Authorizing Dean’s Name</th>
<th>Date Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly Goulis</td>
<td>April 7, 2021</td>
</tr>
</tbody>
</table>

Senior Associate Dean, Viterbi School of Engineering

Authorizing Dean’s Title