# Mechanical Engineering

## Master's Degree Requirements

**STUDENT:**

___________________________

**THESIS ADVISOR:**

____________________

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COMPLETION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Choose Thesis/Program Advisor prior to second semester start</td>
<td>________________</td>
</tr>
<tr>
<td>2) Graduate Degree Program Outline to Graduate College&lt;sup&gt;1&lt;/sup&gt;</td>
<td>________________</td>
</tr>
<tr>
<td>3) Core Courses&lt;sup&gt;2&lt;/sup&gt;</td>
<td>________________</td>
</tr>
<tr>
<td>a. ADVANCED MATHEMATICS – 6 CR.</td>
<td>________________</td>
</tr>
<tr>
<td>ME 304 and ME305 (Advanced Engineering Analysis I, II) or equivalent. Cross-listed with CE304/305 and MATH 275/276</td>
<td></td>
</tr>
<tr>
<td>b. ADVANCED MECHANICS – 6 CR.</td>
<td>________________</td>
</tr>
<tr>
<td>ME336 (Continuum Mechanics), ME338 (Advanced Dynamics)</td>
<td></td>
</tr>
<tr>
<td>c. NUMERICAL METHODS – 3 CR.</td>
<td>________________</td>
</tr>
<tr>
<td>One of ME249 (Computational Fluids Engineering); CE220 (Introduction to Finite Element Analysis), MATH237 (Introduction to Numerical Analysis), MATH238 (Numerical Differential Equations), or MATH274 (Numerical Linear Algebra)</td>
<td></td>
</tr>
<tr>
<td>d. GRAD 397 Master’s Comprehensive Exam&lt;sup&gt;3&lt;/sup&gt;</td>
<td>________________</td>
</tr>
<tr>
<td>4) SPECIALIZATION COURSEWORK&lt;sup&gt;4&lt;/sup&gt; (minimum of track 6 credits for thesis students; 9 track credits for non-thesis students)</td>
<td>________________</td>
</tr>
</tbody>
</table>
**a. Solid Mechanics Track**
ME234 (Mechanical Vibrations); ME252 (Mechanical Behavior of Materials); ME255 (Advanced Engineering Materials); ME257 (Composite Materials); ME333 (Stress Analysis), CE220 (Introduction to Finite Element Analysis)**; CE372 (Matrix Methods in Structural Dynamics; cross-listed with ME330) or any other approved engineering course at the 200 or 300 level dealing with solid mechanics as offered.

**c. Thermo/Fluids Track**
ME242, 344 (Advanced Engineering Thermodynamics I, II), ME243 (Inviscid Flow); ME249 (Computational Fluids Engineering)**, ME343 (Advanced Fluid Mechanics), ME245/345 (Advanced Heat Transfer I, II) ME342 (Advanced Combustion) or any other approved engineering course at the 200 or 300 level dealing with thermo-fluid mechanics as offered. Off-campus courses taught at Concepts/NREC Inc. are also acceptable.

**d. Biomechanics Track**
At least two of: ME207 (Biomechanics I), ME208 (Biomechanics II), and ME209 (Biofluid Dynamics). Other electives include ME301 (Intro. To Biomedical Engineering); EE227 (Biomedical Measurements, Instrumentation and Systems); PH222 Biological Physics; or any other approved engineering course at the 200 or 300 level dealing with biomechanics as offered.

5) Research Seminar

6) Thesis Credits

7) Total Credits
NOTES

1. Must be completed prior to registration for the third semester of study.

2. Required of ALL Master’s Degree candidates in Mechanical Engineering. Note that the core courses may have prerequisites as specified in the catalog which must be satisfied.

3. See attached sheet for guidelines regarding the Master’s Comprehensive Exam.

4. ALL students are required to select a track of specialization. Thesis students must complete a minimum of 6 credits in one track. Non-thesis students are required to complete 15 credits of coursework of which at least 9 credits must be in a given track.

5. ALL Master's degree candidates must give a research seminar

   a. ALL Mechanical Engineering graduate students are expected to attend the Mechanical Engineering Research Seminars that usually occur on Friday afternoon. This carries no degree credit. However, students may register for ME 281/282 Seminar for the semester in which they present their seminar.

   b. The research seminar requirement can be satisfied by the Oral Defense of the Master's Thesis.

6. Master's degree candidates in the thesis option will normally take 6-9 hours of thesis credits; a minimum of 6 is required. All thesis options students must successfully present an oral defense of their thesis.

7. Master's degree program requires the completion of a total of 30 credit hours. This will be distributed between core courses, specialization courses, and thesis research (thesis option) or additional elective courses (non-thesis option)

8. One 100-level course may count for graduate credit, if it has prior written approval of the student's studies committee.

** Courses indicated with the asterisk cannot be used towards BOTH core and specialization course requirements.
The Master’s Comprehensive Examination for the Master's Degree in Mechanical Engineering

1. GENERAL

.1 The Master’s Comprehensive Exam is administered by the Department of Mechanical Engineering.
.2 A written examination will be offered twice a year, November and March, by the end of the third calendar week in each case.
.3 Students must register for GRAD 397 in the semester in which they wish to take the examination, and register with the Department Graduate Coordinator prior to the beginning of the month in which the examination may be offered.
.4 Students planning to graduate in October, and students planning on graduating in the Spring Commencement must complete the examination requirement at least by the prior March. Students planning to graduate in March must complete the examination requirement by at least the prior November.

2. NON THESIS OPTION

.1 Students must take the written examination.
.2 The examination subject matter covers all material germane to Mechanical Engineering at the Master's level, including but not limited to, the areas of Mechanical Engineering associated with the core Master's Degree courses identified by the Department at the time of the student's entry into candidacy for the degree.

3. THESIS OPTION

.1 Students in this option may satisfy the Master’s Comprehensive Examination requirements in one of the following ways:
.1.1 Complete the written Master’s Comprehensive Examination as in the Non-thesis case.
.1.2 Successful presentation of a research seminar. The student's studies committee will decide on the pass/fail status of the seminar.
.2 The research seminar requirement may be satisfied by the successful completion of the oral defense of the Master's thesis. However, the Oral Defense of the Master's Thesis cannot serve as the Master’s Comprehensive Examination.

last updated 8/8/02