UC Davis Department of Civil and Environmental Engineering

MS Program Overview

September 24, 2019
MS I Thesis vs. MS II Project/Exam

**Project/Exam:**
- The default pathway for MS students
- Can be completed in 3-4 quarters
- Slightly greater course requirements
- Exact way of satisfying this varies by Area (more later)

**Thesis:**
- Slightly fewer course requirements
- Requires substantial, original research that is presented in a written document (typically 40-80 pages), similar to a journal article
- Requires more time: typically ~ 2 years
- Requires agreement of Major Professor
How do you choose between the two?

1. Think about your career goals and academic interests

2. Recognize that a thesis is a much more substantial commitment, both in terms of time and energy

3. Understand that the thesis option requires explicit support from a faculty member, and that there are only so many thesis projects available...it is not solely your decision
   - It is common for students to prove themselves through coursework

4. Realize the timeline for the MS I is less predictable compared to the MS II

5. It is possible to switch between the two. You are not locked in by any decision today.
# MS Degree Requirements

<table>
<thead>
<tr>
<th>Plan I MS</th>
<th>Plan II MS (with Written Exam)</th>
<th>Plan II MS (with Individual Capstone Project)</th>
<th>Plan II MS (with Capstone Project Course)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum number of graded engineering course units (exclusive of 290C and 299)</td>
<td>23**</td>
<td>31**</td>
<td>27**</td>
</tr>
<tr>
<td>Minimum number of graded graduate and undergraduate* course units (exclusive of 290C and 299 and courses listed below)</td>
<td>27*</td>
<td>35*</td>
<td>31*</td>
</tr>
<tr>
<td>Capstone Course</td>
<td></td>
<td></td>
<td>4***</td>
</tr>
<tr>
<td>ECI 299 and ECI 290C (Independent study or research) One unit of ECI 290C must be included each quarter when 299 units are taken.</td>
<td>8 required</td>
<td>None required</td>
<td>4 required</td>
</tr>
<tr>
<td>TOTAL MINIMUM UNITS REQUIRED</td>
<td>36</td>
<td>36</td>
<td>36</td>
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</tbody>
</table>

* ECI 296, prerequisite courses, and S/U Graded courses do not meet these requirements.
** Must also meet core course requirements and fulfill the Public Speaking and Technical Presentation Proficiency Requirement
*** Students who are satisfying the Plan II project requirement via the capstone course may not use this towards the 31 unit minimum.
Courses

Your course plan should be coherent

• *Most* CEE courses are 4 units. *Some* are 3 (or even 2 or 5).
• MS II (project/exam): 31-35 units = 8-9 courses
• MS I (thesis): 27 units = 7 courses

Courses Outside CEE

• *All* graduate engineering courses count (but must make sense)
• May take 1 undergraduate course within CEE or a UG or Grad course outside CEE without explicit permission
  • Exception is prerequisite courses. These do not count.
• *Some* graduate courses outside of Engineering can be counted for the graduate engineering course requirement...get *written* (e-mail is fine) approval from Area Advisor or Major Prof.
Required Core Courses

• Group specific
  • ENV ≠ WRE ≠ Geotech ≠ Structures ≠ Transportation
• Must satisfy core course requirement for one group
• Some groups are very prescribed, others are choose \( n \) of those listed

290C and 299

• 299 = research units
• 290C = group meeting
• Always sign up for 290C when you sign up for 299
• Taken with a specific faculty member
• Primarily for MS I students
MS Program of Study

• Your personal “roadmap” to graduation
• Reviewed and approved by either your Major Professor or your Area Advisor
• Discuss with the Area Advisor or your Major Professor at end of first quarter
• Submit approved PoS to Lauren by the 2nd week of the second quarter of entering the MS program (or sooner)
• Courses offered available on CEE website, SISWEB or by talking with your Area Advisor/Major Professor
• MS Program Of Study available on CEE website (updated version coming soon!!):
http://cee.engr.ucdavis.edu/graduate-resources/
Mentoring and Your Major Professor

• For MS II students, the Area Adviser is your default MP
  • You may find an alternative major professor

• All MS I students must have an individual major professor

• How to find an alternative MP, if you don’t have one?
  • Talk to multiple faculty.
  • Look at websites, publications and courses taught to get an initial idea of the specific type of work they do.
  • Be clear about your goals (MS I or MS II)
  • Schedule meetings (e-mail...be persistent) or drop in (does not always work)
Each Area does things slightly differently... when in doubt talk with your Area Advisor. All MS need 36 units total.

Default Option for Env/Water/Tra Students
- Take (and pass) ECI 289C project course in Spring Quarter

Default Option for Geo Students
- Take (and pass) ECI 289D course series and complete capstone project

Default Option for Structural/Mechanics (SESM) Students
- Take 35 units of graded coursework (at least 31 grad)
- Pass written comprehensive exam; typically take in spring or summer of Y1; may retake; offered multiple times a year

Option Available for all Areas
- Complete a project under the supervision of an individual faculty member over 1-2 quarters (and/or summer); 4 units research required (ECI 299/290C)
MS II Timeline

**Fall Quarter**
1. Take 3 courses
2. Develop *complete* program of study
3. Consult with area advisor

**Winter Quarter**
1. Complete coursework
2. Update your PoS
3. Complete project OR take Exam (SESM) OR take ECI 289C (ENV, WRE, TRA)

**Spring Quarter**
1. Take 2-3 courses
2. Update your PoS

**Summer?**
1. Finish project OR take Exam?
MS I Timeline

1. Take 2-3 courses
2. Turn in signed PoS
3. Agreement with MP
4. Start developing research plan

**Fall Y1**
- PoS

**Winter Y1**
- 1. Take 2-3 courses
- 2. Talk with Faculty
- 3. Develop PoS

**Spring Y1**
- Research

**Summer**
- 1. Take 2-3 courses
- 2. Make plan for the summer

**Fall Y2**
- Research
- 1. Writing thesis

**Winter Y2**
- 1. Writing thesis
- 2. Submitting to thesis committee (1 month lead time)
- 3. Submit thesis to Grad Studies

**Spring Y2**
- 1. Research
- 2. Submitting to thesis committee (1 month lead time)
- 3. Submit thesis to Grad Studies
Prerequisites – Students without Engr. Degree

Select four courses from the following six categories:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECI 100*</td>
<td>Fluid Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>ENG 104</td>
<td>Mechanics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>ENG 105**</td>
<td>Thermodynamics</td>
<td>4</td>
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<tr>
<td>ECI 140B</td>
<td>Aquatic Chemistry</td>
<td>4</td>
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<tr>
<td>ECI 141</td>
<td>Engineering Hydraulics</td>
<td>4</td>
</tr>
<tr>
<td>ECI 115</td>
<td>Computer Methods</td>
<td>4</td>
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<tr>
<td>ECI 114</td>
<td>Probabilistic Systems Analysis</td>
<td>4</td>
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*ENG 103 may be alternatively taken, with permission
** Or Chem 110C or Chem 107A or Chem 107B

Including at least two of the following classes:
• ECI 100
• ENG 104
• ENG 105
• ECI 140B

And 6 additional upper division engineering course units (minimum of 2 courses) approved by the student’s major professor or GPC Rep.

These do not count towards the degree requirements.