UC Davis Department of Civil and Environmental Engineering

PhD Program Overview

September 29, 2020
The PhD consists of:

1. Coursework (Years 1 & 2)
2. The Qualifying Exam (2nd or 3rd year)
3. Your Dissertation & Exit Seminar
4. Hard work
PhD Coursework Requirements

- A minimum of 46 units of coursework beyond the baccalaureate degree are required. A minimum of 24 units must be taken at the UC Davis campus. Research units are also required and are not counted toward the coursework requirements.
- Coursework used to fulfill degree requirements may not be taken S/U unless the course is normally graded S/U; seminars, such as ECI 296, and research units cannot be counted towards the unit requirement.
- Core class requirements (specific to each area) must be fulfilled.
- All students must demonstrate proficiency in public speaking and technical presentation (usually through presenting in an appropriate seminar series, or a course).
PhD Coursework

46 units total ~ 11.5 courses

- Generally take 2 or 3 courses per quarter
- 2 per quarter → 6 quarters
  - Allows more time to get started on research
- 3 per quarter → 4 quarters

Acceptable Programs of Study must satisfy the following qualitative criteria:

- **Depth**: knowledge of theoretical and practical aspects of the field usually, but not always;
- **Breadth**: should expand foundational knowledge;
- **Coherence**: courses taken should be complementary and intentionally chosen. The requirement of coherence expressly precludes taking a large number of single courses in unrelated areas.
PhD Program of Study

• Your coursework roadmap. Create a draft as soon as possible in consultation with your major professor

• Must be signed by your PoS committee (3 CEE faculty) and submitted to the Graduate Program Coordinator
  • Talk with your MP about who should be on your PoS committee

• Must submit preliminary PoS for approval by the second quarter of entering the Ph.D. program at the latest

• Submit final PoS for approval after completing all coursework, or in last quarter when you are taking courses.
  • Must be done prior to applying for and taking the Qualifying Exam.

• Ph.D. Program of Study forms available on the CEE website:
  http://cee.engr.ucdavis.edu/graduate-resources
PhD Qualifying Exam

• You are expected to take your QE by the end of 2nd year or early in 3rd year
  • If you already have an MS, you should plan on Y2
  • If you do not have an MS, you should plan on Y3 (or earlier)
  • Talk to your MP about exact timing

• Must have completed all coursework first (up to two courses taken concurrent)

• May require a written research prospectus and oral presentation and oral exam

• See the degree requirements and talk to your faculty

• Must apply for the QE at least 1 month in advance to QE date
PhD Qualifying Exam

• Oral Exam
  • 3 hours
  • Includes oral presentation
  • Coursework-related questions
  • Schedule well in advance (2-3 months)...hard to schedule in summer
  • Study
  • Consider asking friends/older grad students to conduct a mock exam

• Oral Presentation
  • Part of the oral exam
  • Typically 15-20 minutes straight through
  • Prepare to be interrupted
  • Builds off your written prospectus
  • Practice
PhD Qualifying Exam

• The QE Committee
  • 4 members
    • Determine with your major professor
  • QE Committee Chair
    • must be from CEE Grad Group
    • Cannot be your major professor
  • Probably includes your PoS Committee members
  • At least 3 members from CEE Grad Group
  • At least 1 external member
  • Can include your major professor

• Must submit form to Graduate Program Advisor for approval by Grad Studies
  • Submit at same time that you schedule your exam (one month or earlier)

https://gradstudies.ucdavis.edu/current-students/forms-information
Constitute a Dissertation committee after passing your QE

- 3 members (at minimum)
  - Major professor (chair)
  - At least one other CEE member
  - If non-faculty, requires exception (aka forms!)

  *Engage your committee early and often* (not only your MP)

- Dissertation = a written documentation of the academic research you have done as a Ph.D. student

- Talk with your major professor early on about expectations

- Everyone’s dissertation is different
  - Some are very focused and build on one constant theme
  - Others cover multiple topics
Dissertation

• *Typical* length?
  • Introduction, linking everything together
  • Approximately 3 publishable units (i.e. main chapters)
  • No specific page requirement
• Strict formatting requirements (see Grad Studies website)
• Provide to committee *at least* 1.5 months prior to expected graduation
  • Typically, first reach consensus with your MP, then you can send to other members...but okay to talk with them about your work early!
  • they have 4 weeks th to return it to you and you have to respond to comments, questions, etc.
Exit Seminar

• Presented in the quarter you submit the dissertation to the committee or in your last quarter
• Talk with your MP about structure
  • Everything? The most exciting aspect? Hard to pack it all into one presentation
• Must provide a seminar announcement at least 1 week before the seminar (send to Lauren for distribution)
  • Title
  • Date
  • Time and Location
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>
</tr>
<tr>
<td>ECI 140B</td>
<td>Aquatic Chemistry</td>
<td>4</td>
</tr>
<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>
</tr>
<tr>
<td>ECI 114</td>
<td>Probabilistic Systems Analysis</td>
<td>4</td>
</tr>
</tbody>
</table>

*ENG 103 may be alternatively taken, with permission
**Or Chem 110C or Chem 107A or Chem 107B

These do not count towards the degree requirements

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

And 2 additional upper division engineering courses approved by the student’s major professor or GPC Rep
PhD Timeline

Year 1:
  • Coursework + initial research
  • Preliminary program of study by winter

Year 2:
  • Coursework + research
  • Identify and ask QE committee
  • Final program of study (when courses are done)
  • If you have an MS already:
    • Write prospectus (if needed) in Winter
    • Take QE in Spring

Year 3:
  • If no MS, write prospectus (if needed) and take QE
  • Research

Year 4:
  • Research + begin dissertation

Year 5:
  • Research + final dissertation + Exit Seminar
Path to the PhD

- You will find that there are many challenges along the way
- Be proactive in finding/asking for help when you need it
- Build a cohort you can talk with
- Don’t isolate yourself
- You must be your best advocate