**MATERIALS SCIENCE AND ENGINEERING**  
**DOCTORAL PROGRAM REQUIREMENTS**

The Ph.D. Program is designed to prepare students for a career in research and/or teaching in their area of specialization. Students must complete the following 36-unit course requirements and exams by the recommended years listed below to be awarded the degree:

- Complete Required M.S. Courses
  - Students must complete four Mandatory Core Courses and at least two of the ten Elective Core Courses:
    - Mandatory Core Courses: MATS 201A, MATS 201B, MATS 201C, MATS 227
    - Elective Core Courses (select at least two): MATS 205A, MATS 251A, MATS 251B, MATS 252, MATS 253, MATS 255, MATS 256, MATS 257, MATS 261A, MATS 261B. See Courses for detailed course information.

- Enroll in MATS 200 for six quarters. See Courses for requirement details.

- Complete three advanced graduate courses (in addition to those required for the M.S.) that have been approved by the student’s advisor. Courses must be 4 units each (12 units total), in an engineering-related field, for a letter grade.

- Courses must be taken for a letter grade. P/NP or S/U grades will not be accepted, with the exception of MATS 200 and MATS 299.

### YEAR 1

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#### COMPREHENSIVE EXAM

- Pass the Comprehensive Examination and Complete M.S. Degree
  - The examination consists of twelve questions, two from each of the six core courses. The examination will not exceed six hours in duration. The examination is usually administered two weeks after spring quarter finals in June.
  - PhD students must obtain a passing grade of 70 percent.
  - Typically, students take the exam after one year of full-time enrollment. This exam may only be retaken once before the end of the second year of study.

### YEAR 2

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#### LITERATURE REVIEW EXAMINATION

- Pass the Literature Review Examination
  - The examination consists of a presentation by the student on literature and interpretations on a research subject directly or indirectly related to the student's research topic, in the presence of the student's advisor.
  - The student must submit a signed Literature Review Exam Form and the review (paper or presentation) to MATS Advising.
for completion of the requirement. The Literature Review presentation must be a comprehensive review of the field, not a research paper.

- This requirement must be completed within one year after passing the Comprehensive Examination.

### YEAR 3

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**SENATE EXAMINATION**

- **Pass the Ph.D. Qualifying (Senate) Examination to Advance to Ph.D Candidacy**
  - The Senate Exam is an oral examination of the student's research proposal. The student must create a committee of five faculty members associated with the Materials Science and Engineering Program.
  - Please review MATS committee details and resources from Graduate Division for committee compilation information. You must confirm and obtain approval of your committee from your Faculty Advisor/PI. You must contact and obtain the approval of each committee member serving on your committee.
  - The student must notify the graduate coordinator of their intent to hold the Senate Exam four weeks prior to the exam through the MATS Exam Form.
  - Some PI/Faculty Advisors request a written proposal of the research topic (Word document) or the presentation slides (PowerPoint) at least one week prior to the exam. Please check in with your PI/Faculty Advisor to determine if they would like such documentation.
  - This exam is typically taken at the end of the third year of study, but no later than the end of the fourth year.

### YEAR 4 & YEAR 5

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**DISSERTATION DEFENSE**

- **Complete the Final Dissertation Defense**
  - The Dissertation Defense is the final Ph.D. examination.
  - Upon completion of the dissertation research project, the student writes a dissertation that must be defended in an oral examination and public presentation conducted by the doctoral committee.
  - Complete and defend a dissertation which, in the opinion of the dissertation committee, contains original work that should lead to publication of at least one significant article in an appropriate referred journal.
  - The student must notify the graduate coordinator of the exam approximately four weeks prior to the exam through the MATS Exam Form.
  - Please plan to send your dissertation to your committee at least four weeks prior to your defense. You must confirm and obtain approval of your committee from your Faculty Advisor/PI. You must contact and obtain the approval of each committee member serving on your committee.
  - Graduate Division Policies (Doctoral)
  - Licensure and Certification Disclosures

Students who transfer with some graduate credit or an M.S. from another institution will have their records reviewed by a faculty advisor, and an appropriate individual course of study may be approved. To have your records reviewed, please complete the MATS Course Waiver Request Form, and review Graduate Division policies.

**MATS WEBSITE:** [https://mae.ucsd.edu/matsci/graduate/doctoral](https://mae.ucsd.edu/matsci/graduate/doctoral)