

GRADUATE PROGRAM IN MATERIALS SCIENCE AND ENGINEERING DEGREE REQUIREMENTS

Revised: May 20, 2010

Graduate Council Approval: March 4, 2011

MASTER'S PROGRAM

1) Admissions Requirements

An undergraduate major in Materials Science and Engineering, most engineering disciplines (e.g. Chemical, Electrical, or Mechanical Engineering), Physics, Applied Physics or Chemistry, or Applied Science is typical for Materials Science and Engineering graduate students, but is not required. The minimal background for entrance into the master's of science program is a bachelor's degree with 3.0 overall grade-point average. Applicants must submit an online Office of Graduate Studies application, GRE scores, a personal history statement and statement of purpose, and 3 letters of recommendation.

a) **Prerequisites:** Bachelors degree in Materials Science and Engineering or closely related field (e.g. Physics, Chemistry, Electrical Engineering, Chemical Engineering, Mechanical Engineering, Applied Physics or Chemistry, Applied Science) with coursework similar to UC Davis courses EMS 160, 162, 164, 172, and 174)

b) **Deficiencies:** Students who have not taken courses equivalent to UC Davis courses EMS 160, 162, 164, 172, and 174 should consult with the graduate adviser to determine if remedial coursework is needed. If so, these courses must be completed in the first year.

2) Master of Science in Materials Science and Engineering, Plan I (Thesis)

Plan I. This plan requires 36 units of graduate and upper division courses (the 100 and 200 series only) and a thesis. At least 20 of the 36 units must be the core courses materials science and engineering.

3) Course Requirements - Core and Electives

a) Core Courses, 20 units:

The five core courses in materials science and engineering will constitute the requirement for 20 units of graduate courses in the major field:

- EMS 260, Advanced Thermodynamics of Solids (4 units)
- EMS 262, Advanced Topics in Structure of Materials (4 units)
- EMS 264, Advanced Materials Kinetics (4 units)
- EMS 272, Advanced Functional Properties of Materials (4 units)
- EMS 274, Advanced Mechanical Properties of Materials (4 units)

b) **Elective Courses (16 unit's total):**

The 16 elective units can comprise an appropriate combination of thesis research (EMS 299) and/or upper-division or graduate technical electives. Students must complete 2 units of research seminar courses (ECM 290). All upper division and graduate technical electives must be must be completed on a letter grade basis. All electives should be chosen in consultation with the adviser.

c) **Summary:**

A Master of Science degree may be awarded upon completion of Plan I (thesis plan) in which a total of 36 upper-division and graduate course units and a thesis are required. Of this total, 20 units must be material science and engineering graduate core courses. All core courses must be completed on a letter grade basis. M.S. students must also complete 2 units of research seminar courses (ECM 290) during their M.S. degree program. The remainder of the 36 unit requirement can comprise an appropriate combination of thesis research (EMS 299) and/or upper-division or graduate technical electives.

Any course that was used to meet the requirements for any other degree (e.g., B.S., M.S, Ph.D.) at any institution cannot be used to fulfill the M.S. coursework requirements. Six-quarter units of credit of upper division undergraduate and/or graduate courses taken at an accredited institution and that were not required for any other degree may be applied to the M.S. degree requirements.

Students with an undergraduate degree other than Materials Science and Engineering should, in consultation with their major professor and graduate adviser, devise a strategy to ensure that they are sufficiently trained in the fundamentals of Materials Science. This may include taking UC Davis upper division materials science and engineering core courses (EMS 160, 162, 164, 172, and 174). Only two upper division core courses can be counted toward the graduate program requirements.

A minimum course load is 12 units each academic quarter for full-time students. Per UC regulations students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter, without approval of the Associate Dean of Students in Graduate Studies.

4) **Special requirements:** None Applicable

5) **Committees**

a) **Admission Committee**

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Graduate Affairs Committee (GAC). The GAC consists of six graduate program faculty. Based on a review of the entire application, a recommendation is made to accept or

decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies. Applications are accepted through January 15, for the following fall quarter.

b) **Advising and Guidance Committee**

Upon entering the program, students are assigned a graduate adviser. The Adviser(s) are a resource for all graduate students in the program to provide information and advising on academic requirements, policies and procedures (Graduate Studies, Graduate Council, Program).

During the winter quarter of the first year, after the student has selected a major professor (thesis adviser), the student, and two other thesis committee members develop a Program of Study. The Program of Study should be submitted to the graduate adviser for approval by end of the winter quarter of the first year.

Full-time graduate students must register for a minimum of 12 units each academic quarter; these 12 units can be made up of required courses, electives, and 290C/ 299s. The technical interests of the student are considered and the program is individually tailored in such a way that the student obtains a strong over-all technical background.

c) **Thesis Committee**

The student, in consultation with his/her major professor and graduate adviser nominate two additional faculty members to serve on the Student's Thesis Committee. These nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80, Graduate Council B.1.). Master's student must select their major professor from among the members of the Chemical Engineering and Materials Science graduate faculty. The major professor serves as chairperson of the thesis committee and at least one other member must be a member of the graduate faculty in Chemical Engineering and Materials Science.

6) **Advising Structure and Mentoring**

The **Major Professor** is the faculty member who supervises the student's research and thesis; this person serves as the Chair of the Thesis Committee. The **Graduate Adviser**, who is appointed by the Chair of the program, is a resource for information on academic requirements, policies and procedures, and registration information until the Course Guidance Committee is formed. The **Mentoring Guidelines** can be found on the Department's Web Site at: <http://www.chms.ucdavis.edu/students/graduates/>

7) **Advancement to Candidacy**

Every student must file an official application for Candidacy for the Degree of Master of Science after completion of at least one-half of the degree requirements and at least one quarter before completion of all degree requirements; this will typically be in the 3rd quarter. The Candidacy for the Degree of Master form can be found online at:

<http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Adviser must recommend these changes to Graduate Studies. Students must have their Graduate Adviser and thesis committee Chair sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to: the Thesis Committee Chair, the appropriate graduate staff person, and the student. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

8) Thesis Requirements, Plan I

Masters students are expected to begin work on their research immediately after they have chosen a topic and have been assigned a major professor. New students should begin consultations with individual faculty members during their first quarter to discuss research topics. It is critical that the M.S. student complete coursework and research in a timely manner in order to finish within six academic quarters. Each student is expected to present the results of his or her thesis research in a public seminar, which may be scheduled as part of the regular ECM 290 seminar.

The thesis committee and the graduate adviser advise each student to develop a meaningful sequence of courses. The technical interests of the student are considered and the program is individually tailored in such a way that the student obtains a strong over-all technical background.

A written outline of the research project shall be submitted to the thesis committee. This outline will include critical evaluation of the methods and their limitations plus a full description of experimental design, protocols, and data analysis. Consultations should occur at reasonable time intervals between the candidate and the thesis committee meeting as a group. The M.S. thesis should be:

- A scholarly piece of experimental research.
- Rigorous in approach (design, methodology, and analysis), but not as extensive as a Ph.D. dissertation.

There are no specifications on length or the number of publications needed. For information on how to prepare and file your thesis, visit the Office of Graduate Studies Website: <http://gradstudies.ucdavis.edu/students/filing.html>

9) Typical Time Line and Sequence of Events

Year 1:

<u><i>Fall</i></u>	<u><i>Winter</i></u>	<u><i>Spring</i></u>
EMS 260	EMS 264	EMS 290C/299
EMS 262	EMS 274	Elective Course
EMS 272	EMS 290C/299	Submit application for
	Elective Course	Candidacy for the
		Degree of M.S.

Year 2:

<u><i>Fall</i></u>	<u><i>Winter</i></u>	<u><i>Spring</i></u>
EMS 290C/299	EMS 290C/299	EMS 290C/299
Elective Course		Submit M.S. Thesis

10) Sources of funding

The department does not guarantee funding for students seeking the Master of Science degree. However, depending on each student's individual interests and needs, some support may be available through Graduate Student Researcher (GSR) and/or Teaching Assistantship (TA).

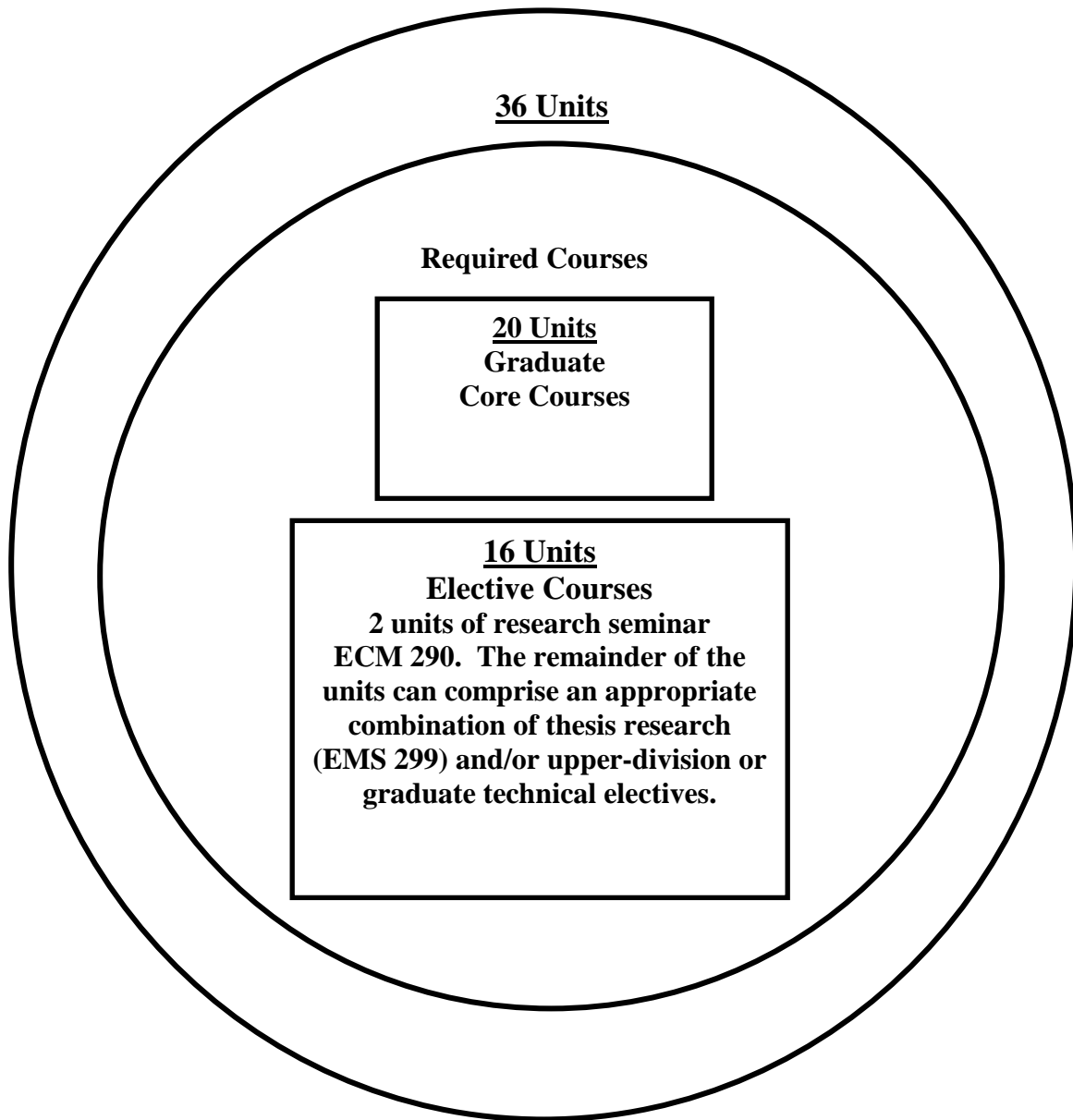
11) PELP, In Absentia and Filing Fee status

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>.

If you are considering PELP, *In Absentia* or Filing Fee status, please contact the graduate program coordinator.

Materials Science and Engineering M.S., Plan I Degree Requirements

M.S. Program of Study:



PH.D. PROGRAM

The awarding of a Ph.D. acknowledges an individual's ability to perform original and creative research. A graduate student pursuing a Ph.D. should be cognizant of the fact that a Ph.D. is not simply a matter of following the daily instructions of a Major Professor. A candidate for a Ph.D. is expected to demonstrate the ability to make independent and critical assessments of research in his/her field of study, be capable of proposing original ideas and translating these ideas into hypotheses that can be tested through experiments or theory. The candidate for a Ph.D. is also expected to communicate his/her original research in written and/or oral forms in professional venues.

1) Admissions Requirements

Applicants for admission must meet the University of California minimum requirements for admission. Other requirements for admission include:

- Hold a Bachelor's or Master's degree in a discipline relevant to the discipline.
 - Submit an Office of Graduate Studies online application.
 - Scores from the Graduate Record Examination (General Test).
 - English proficiency examination for international applicants who have not studied at an English speaking University: TOEFL or other University approved examination. International applicants must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
 - Three letters of recommendation.
 - Statement of Purpose and Personal History Statement (part of the Graduate Studies online application).
 - Applicants for admission must meet the University of California minimum GPA requirement for admission (3.0 overall). The average GPA of program admits has been around 3.5.
- a) **Prerequisites:** Bachelors degree in Materials Science and Engineering or closely related field (e.g. Physics, Chemistry, Electrical Engineering, Chemical Engineering, Mechanical Engineering, Applied Physics or Chemistry, Applied Science) with coursework similar to UC Davis courses EMS 160, 162, 164, 172, and 174)
- b) **Deficiencies:** Students who have not taken courses equivalent to UC Davis courses EMS 160, 162 164, 172, and 174 should consult with the graduate adviser to determine if remedial coursework is needed. If so, these courses must be completed in the first year.

2) Dissertation Plan B

Plan B specifies a three member (minimum) dissertation committee, an optional final oral examination (made on an individual student basis by the dissertation committee), and an exit seminar.

3) **Course Requirements: 38 units**

All courses must be completed on a letter grade basis.

a) **Core Courses: 20 units**

The five core courses in Materials Science and Engineering will constitute the requirement for 20 units of graduate courses in the major field:

EMS 260: Advanced Thermodynamics of Solids (4 units)

EMS 262: Advanced Topics in Structure of Materials (4 units)

EMS 264: Advanced Materials Kinetics (4 units)

EMS 272: Advanced Functional Properties of Materials (4 units)

EMS 274: Advance Mechanical Properties of Materials (4 units)

b) **Elective Courses: 18 units**

The 18 elective units can be upper-division and/or graduate technical electives and may be selected from courses offered by the MSE program and/or from courses outside the program (e.g. other programs in Engineering, Mathematics, Physics, Chemistry, etc.). From within these elective courses, the students must define a minor, which represents a set of coherent courses with a technical focus which complements the major. At least 9 of the 12 units of the minor course work must be graduate level courses. Courses should be chosen in consultation with the adviser.

c) **Summary**

A Ph.D. degree requires completion of a total of 38 units (exclusive of seminar and research course work units), dissertation and an exit seminar. 26 units of course work in the major (materials science and engineering) and 12 units of course work in the minor (to be selected by the student in consultation with his/her Guidance Committee). The minor must represent a set of coherent courses with a technical focus which complements the major.

See example's of the Program of Study in the Appendix. The Program of Study template can be found on the CHMS Website at: <http://chms.engineering.ucdavis.edu/students/graduates/index.html>

Students with an undergraduate degree other than Materials Science and Engineering should, in consultation with their major professor and graduate adviser, devise a strategy to ensure that they are sufficiently trained in the fundamentals of Materials Science. This strategy may include taking upper division Materials Science and Engineering core courses (EMS 160, 162, 164, 172, 174). Only two upper division core courses can be counted toward the graduate program requirements.

Ordinarily, students entering the graduate program with a Bachelor's degree will perform all work for the graduate degree in residence on the Davis Campus. However, it is recognized that some entering students have already completed advanced and graduate coursework beyond the requirements for their Bachelor's degrees. Course work taken at other academic institutions is not transferred to a student's UC Davis graduate record, although that course work may be applied to the student's Program of Study. Under normal circumstances, the department requires the doctoral student to complete a

minimum of 30 units of course work listed on the Program of Study at UC Davis. The limit for such transfer credit is 8 units from another institution with permission of the student's Graduate Adviser. However, entering students with MS degrees or extensive completion of advanced and graduate coursework, may transfer an additional 6 units from another institution with permission of the Graduate Adviser and the Chair of the Graduate Affairs Committee. Students transferring to Materials Science and Engineering Ph.D. Program from a Ph.D. Program of high standard who have performed coursework indicating superior scholarship may transfer **as many as 19 units** with permission of the Graduate Adviser and the Chair of the Graduate Affairs Committee.

Transferred units will *not* be accepted if they were used in the satisfaction of the requirements of a bachelor degree or if they constitute units from a core undergraduate Materials Science and Engineering course. In addition, a major consideration in transfer of units will be course content and mastery of the material. Therefore, the student should prepare a dossier of coursework and demonstrate understanding of the material (for example in discussion with a faculty currently teaching the course at UC Davis). If the content of the transferred course is similar to a currently offered Materials Science and Engineering Core Course, as verified by the current instructor, the student may be excused from taking the core course and list the transferred course on the Program of Study.

A minimum course load is 12 units each academic quarter for full-time students. Per UC regulations students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter, without approval of the Associate Dean of Students in Graduate Studies.

4) Special Requirements: Not Applicable

5) Committees

a) Admissions Committee

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Graduate Affairs Committee (GAC). The GAC consists of at least six graduate program faculty. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies.

b) Advising and Guidance Committee

Upon entering the program, students are assigned a graduate adviser. The Adviser(s) are a resource for all graduate students in the program to provide information and advising on academic requirements, policies and procedures (Graduate Studies, Graduate Council, Program).

During the winter quarter of the first year, after the student has selected a major professor (dissertation adviser), the student, and two other prospective dissertation committee members (nominated in consultation with the graduate adviser) develop a Program of Study. The Program of Study should be submitted to the graduate adviser for approval by the end of the winter quarter of the first year.

Full-time graduate students must register for a minimum of 12 units each academic quarter; these 12 units can be made up of required courses, electives, and 290C/ 299s. The technical interests of the student are considered and the program is individually tailored in such a way that the student obtains a strong over-all technical background.

c) Preliminary Examination Committee

The committee will be composed of at least five faculty members who are determined by the Materials Science and Engineering faculty. The committee members will be determined by the Materials Science and Engineering faculty. The Major Professor may be one of the committee members, but he/she may be limited in his/her participation in the questioning of the student.

d) Dissertation Committee

The student, in consultation with his/her major professor and graduate adviser, nominates two additional faculty members to serve on the student's dissertation committee. These nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80, Graduate Council B.1.). Doctoral students must select their major professor from among the members of the Chemical Engineering and Materials Science graduate faculty. The major professor serves as chairperson of the dissertation committee and at least one other member must be a member of the graduate faculty in Chemical Engineering and Materials Science.

e) Ph.D. Qualifying Examination Committee

Qualifying Examinations Committees consist of five members with a least one member being appointed from outside of the Materials Science and Engineering program; the chairperson and two other members of the committee must be members of the Materials Science and Engineering graduate program. Students, in consultation with their major professor and Guidance Committee, suggest a list of faculty to the graduate adviser. The graduate adviser then recommends the members of the committee and areas of the examination to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80. Graduate Council B.1.). The major professor may not be a member of the Qualifying Examination Committee. Students must be registered during the quarter in which they take the Qualifying Examination.

6) **Advising Structure and Mentoring**

The **Major Professor** is the faculty member who supervises the student's research and thesis; this person serves as the Chair of the Thesis Committee. The **Graduate Adviser**, who is appointed by the Chair of the program, is a resource for information on academic requirements, policies and procedures, and registration information until the Course Guidance Committee is formed. The **Mentoring Guidelines** can be found on the department's Web Site at: <http://www.chms.ucdavis.edu/students/graduates/>

7) **Advancement to Candidacy for the Degree of Doctor of Philosophy**

The student is eligible for Advancement to Candidacy after successful completion of all graduate degree requirements, and after passing the Qualifying Examination; this typically occurs in the 4th-5th quarter. The student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee in order to be officially promoted to Ph.D. Candidacy. The Candidacy for the Degree of Doctor of Philosophy form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>.

8) **Preliminary Examination, Qualifying Examination and Dissertation requirements:**

a) **Exit Seminar:** The program requires that each student present an exit seminar of his/her research to the departmental faculty and students before filing the dissertation with Graduate Studies. Notification of the seminar to faculty and students must be given at least two weeks in advance; this is arranged through the Graduate Coordinator. At least two of the three Guidance and Reading Committee members must be in attendance. Satisfaction of this requirement must be verified by the Dissertation Committee Chair.

b) **Ph.D. Preliminary Examination Preparation Course**

- The Preliminary Examination Preparation Course (EMS 298-50) is offered every winter quarter and consists of the students giving presentations to the class on at least two journal publications assigned to them by the course instructor.

c) **Ph.D. Preliminary Examination**

- A GPA of over 3.25 and a grade of B or better in the Preliminary Examination Preparation Course are required for all Materials Science Ph.D. students to take the Preliminary Examination. Students with a GPA between 3.25 and 3.5 should ask their major professor to write a confidential letter to be included in the student's evaluation file in support of their participation in the Preliminary Examination.
- The Ph.D. Preliminary Examination is the first evaluation of prospective Ph.D. students by the graduate faculty.
- The objective of this evaluation is to determine whether the student has mastered the subject matter in Materials Science and Engineering at a level appropriate for the Ph.D. and that the student has an ability to integrate basic concepts across subject areas.

- The Preliminary Examination is taken in the spring quarter of the first year (3rd quarter). It consists of an oral examination during which the student must provide a critical literature review and answer the questions from the faculty based on the presentation and relating to fundamental knowledge of Materials Science topics. The duration of the presentation will be 30 minutes. The committee will be composed of at least five faculty members. The Major Professor may be one of the committee members, but he/she may be limited in his/her participation in the questioning of the student.

d) Qualifying Examination Eligibility:

After passing the Ph.D. Preliminary Examination the student should immediately begin preparing for the Qualifying Examination administered by a faculty committee appointed by the Office of Graduate Studies. Students are required to take the Qualifying Examination at the time they have completed all coursework listed in these degree requirements and their program of study, with the exception that they may be enrolled in no more than the final two courses during the quarter of the exam. Passing this exam makes the student eligible for advancement to candidacy.

A GPA of 3.5 in graduate course work is expected (minimum 3.25 is required) in order to take the Qualifying Examination. Once a time and date have been agreed upon by the student and committee members (the student coordinates the scheduling), the student completes and submits the Application for the Qualifying Examination to the Graduate Coordinator, no later than four weeks prior to the Qualifying Examination. It takes approximately two weeks for Graduate Studies to process the application and to notify the committee members of their appointment. A student must not take the qualifying examination prior to receipt of the Notice of Admission to the Qualifying Examination from Graduate Studies.

Upon successful completion of the Qualifying Examination, the student must complete an Application for Advancement to Candidacy form, which lists the proposed members of the Dissertation Committee.

The Qualifying Exam is normally taken by the end of the winter quarter of the second year (5th quarter), but no later than the end of the spring quarter of the second year (6th quarter). These expectations move to the fall quarter of their second year (4th quarter) for students who entered the program with Master's degrees in Materials Science and Engineering or closely related fields.

The Qualifying Examination will consist of written and oral examinations.

1. **Written Portion of the Exam:** The written dissertation research proposal, (approved by the Major Professor), and bibliography should be provided to members of the qualifying examination committee at least 10 days before the qualifying exam. The dissertation proposal is typically 10 – 15 pages double spaced and of format similar to a NSF or NIH grant proposal containing the following sections: Objectives (Specific Aims), Background, Proposed Work, Schedule of Work, and References.

2. **Oral Portion of the Exam:** The oral exam tests the student's level of preparation to pursue Ph.D. research. Students are expected to have a thorough understanding of the context of their proposed research, relevant literature and the appropriate theoretical and experimental approaches to their research problem. Successful completion of the examination does not require that the student have extensive research results.

The Qualifying Examination will be limited to the areas listed on the Application for the Qualifying Examination and a critical evaluation of a dissertation proposal. Successful completion of the Department Ph.D. Preliminary Examination and an approved Ph.D. Program of Study will be considered by the Qualifying Examination Committee to represent successful completion of the comprehensive part of the Qualifying Examination. The format of the Qualifying Examination will consist of a 20 to 30 minute presentation by the student followed by proposal related questions, general questions in the exam areas, and feedback by the Committee. The normal examination time is three hours.

3. **Qualifying Examination Outcome**

A committee, having reached a unanimous decision, shall inform the student of its decision as "Pass" (no conditions may be appended to this decision), "Not Pass" (the Chair's report should specify whether the student is required to retake all or part of the exam, list any additional requirements, and state the exact timeline for completion of requirements to achieve a "Pass"), or "Fail". If a unanimous decision takes the form of "Not Pass" or "Fail", the Chair of the QE committee must include in its report a specific statement, agreed to by all members of the committee, explaining its decision and must inform the student of its decision. Having received a "Not Pass", the student may attempt the QE one additional time. After a second exam, a vote of "Not Pass" is unacceptable; only "Pass" or "Fail" is recognized. Only one retake of the exam is allowed. A "Fail" results in a recommendation to the Dean of Graduate Studies for disqualification from the program.

4. **The Dissertation**

Plan B specifies a three member (minimum) dissertation committee, an optional final oral examination (made on an individual student basis by the dissertation committee), and an exit seminar.

A dissertation on a subject chosen by the candidate and Major Professor, bearing on the principal subject of study, and of such character as to show ability to pursue independent investigation, must be approved by the Dissertation Committee and by the Graduate Council before the degree will be recommended. The doctoral dissertation must be an original and substantial contribution to knowledge in the student's major field. It must demonstrate the ability to carry out a program of advanced and independent research and to report the results in accordance with standards observed in recognized peer reviewed scientific journals. Prior to submitting the dissertation to the Office of Graduate Studies, each student is expected to present the results of his or her dissertation research in a public seminar, which may be scheduled as part of the regular ECM 290 seminar.

There are no specifications on length or the number of publications needed. For information on how to prepare and file your dissertation, visit the Office of Graduate Studies Website: <http://gradstudies.ucdavis.edu/students/filing.html>

9) Normative Time to Degree

The goal of the Department is that each student should have the opportunity to complete all degree requirements (coursework and dissertation defense) within twelve academic quarters (not including summers) if they enter the graduate program at Davis with a B.S. degree in Materials Science and Engineering or nine academic quarters if they enter with an M.S. degree in Materials Science and Engineering. It is noted that individual time-to-degree goals may vary due to the nature of advanced research and this framework should serve as a guideline under which the Major Professor and the student can work together towards a timely completion of the dissertation requirements.

10) Typical Time Line and Sequence of Events

Course requirements and the Qualifying Exam are generally completed by the end of year two.

Year 1:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
EMS 260	EMS 264	EMS 290C/299
EMS 262	EMS 274	Elective Course(s)
EMS 272	EMS 290C/299	Preliminary Exam
	EMS 298-50, (Preliminary Exam Preparatory Course)	
	Elective Course(s)	

Year 2:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
EMS 290C/299	EMS 290C/299	EMS 290C/299
Elective Course(s)	Elective Course	
Qualifying Exam*	Qualifying Exam**	
Submit Application for Advancement to Candidacy	Submit Application for Advancement to Candidacy	

* for students entering with a Masters degree

** for students entering with a Bachelors degree

Year 3 and 4:

EMS 290C/299
Completion of Dissertation Research

11) Sources of Funding

The departmental goal for doctoral student funding is to provide a stipend equivalent to a 47.5% GSR (Graduate Student Researcher) for up to four years for those students making satisfactory progress. The stipend can be paid as a GSR, Teaching Assistant, Work Study or Fellowship.

12) PELP, In Absentia and Filing Fee status.

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>

13) Leaving the Program Prior to Completion of the Ph.D. Requirements.

Should a student leave the program prior to completing the requirements for the Ph.D., they may still be eligible to receive a Masters degree if they have fulfilled all the requirements for that degree (see Master's section). Students should consult with their adviser and can use the Change of Degree Objective form available from the Office of the Registrar:

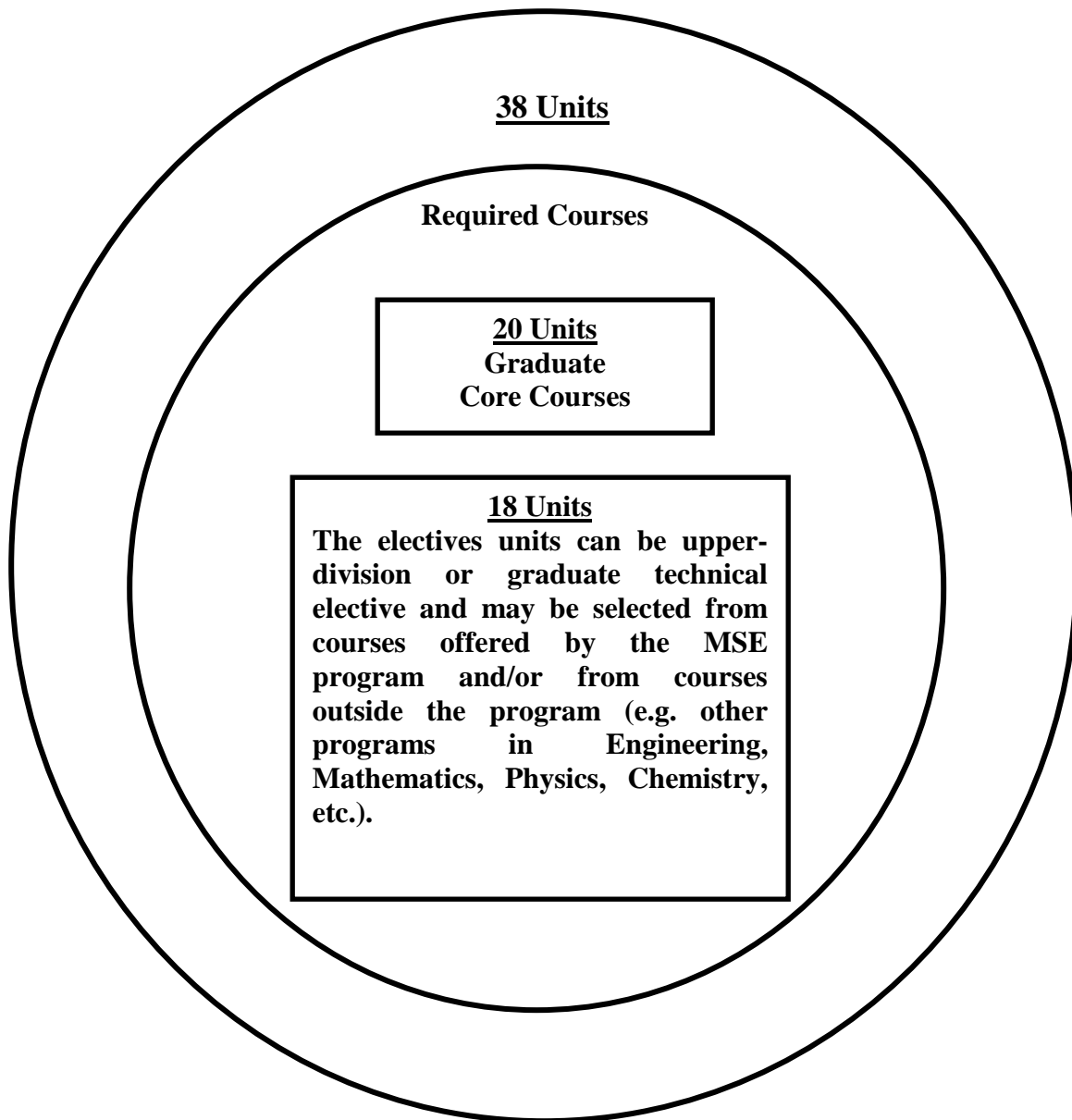
<http://registrar.ucdavis.edu/PDFFiles/D065PetitionForChangeOfGraduateMajor.pdf>

Attached here for your reference:

- a) **Materials Science and Engineering Ph.D. Degree Requirements**
- b) **Materials Science and Engineering Ph.D. Program of Study Form**

Materials Science and Engineering Ph.D. Degree Requirements

Ph.D. Program of Study:



Program of Study for Doctoral Candidates

Name		Department	
BS	: School	Major	Date
MS	: School	Major	Date

Title of Major

Course Title (abbreviate please)	3 Ltr Prefix	Number	School	Quarter & Year	Non UCD Units	UC Davis Units	Undergrad Units	Graduate Units	Grade
Total:									

Title of Minor *

Total:									

Guidance/Dissertation Committee

1. _____ (Date)
Major Professor's Signature
2. _____ (Date)
2nd Committee Member's Signature
3. _____ (Date)
3rd Committee Member's Signature
4. _____ (Date)
Reviewed & Signed by Graduate Adviser

Total Quarter Units:

(except 290 & 299) UG (100) G (200)

Total UCD Quarter Units:

Original: Revision#: Please indicate changes below and attach previous program of study.

Material Science and Engineering: Major 26 units + 1 Minor 12 units = Total 38 units.

Chemical Engineering: Major 26 units + 1 Minor 12 units = Total 38 units.

General Program of Study Requirements: 8 years ago maximum on courses.

*The minor represents a set of coherent courses that complement the major. 06-29-10