March 24, 1999

TO: Subhash Risbud, Chair
Graduate Program in Chemical Engineering

FROM: David Gilchrist, Chair
Graduate Council

SUBJECT: Graduate Program in Chemical Engineering, revised degree requirements

At its meeting of March 18, 1999, Graduate Council considered and approved the graduate program in Chemical Engineering's March 2, 1999 revision of its degree requirements. These revisions were requested by Prof. Judy Callis, the Educational Policy Committee chair during the 1997-98 academic year, following EPC's review of the program's degree requirements in winter quarter 1998.

At its meeting of March 12, 1999, EPC reviewed the Revised Program of Study for Chemical Engineering (3/2/99 revision). Prof. Charles Hunt, EPC Chair, reported that EPC approved the revised version without comment and recommended that Council approve it.

/Isw

c: C. González
J. Hedrick
R. Kraft
R. Montero
Z. Munir
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I. ACADEMIC INFORMATION

Graduate research is the cornerstone upon which an outstanding academic department is built. An important element of this research activity is how students interact with faculty. We strive for an environment within the Department that nurtures and promotes collegial interaction between the graduate student body and the faculty. This is best achieved when graduate students are viewed as junior colleagues. We believe that such a spirit can flourish only when the faculty are clearly committed to providing outstanding dissertation/thesis advising, necessary financial support for the students, and the needed resources required for the active pursuit of research objectives. Graduate students, in turn, are expected to apply their intellectual and creative skills to achieve the advanced degree objectives set before them. The Department is committed to the goal that all graduate students making satisfactory progress toward their degree objectives receive ample advising and adequate financial support.

The purpose of this document is to describe the degree requirements for the PhD (Doctor of Philosophy) and MS (Master of Science) in Chemical Engineering, outline the major milestones in each program, delineate the responsibility of the faculty and students in meeting the Department’s policy objective, and to familiarize graduate students with departmental procedures and policies. It is important to point out that the University (i.e., Academic Senate/Graduate Studies), the College of Engineering, and the Department of Chemical Engineering and Materials Science each have their own set of requirements and a student must satisfy all three sets. In this document, the most restrictive requirements of the three sets are defined to provide the most useful, concise and thorough guidelines. Do not be misled, however, by less stringent requirements you may find in other documents. Students may satisfy degree requirements in effect at the time of their admission or requirements in effect at any time during their graduate studies. If you have any questions, concerns or comments about this handbook please contact the Graduate Adviser for Chemical Engineering, Pieter Stroeve, 3100 Bainer Hall, phone 752-8314, Email: pstroeve@ucdavis.edu.

A. FACULTY RESOURCES

Graduate Adviser: The graduate adviser for Chemical Engineering in the Department of Chemical Engineering and Materials Science is a resource for all graduate students in the department to provide information and advising on academic requirements, policies and procedures (Graduate Studies, College, and Departmental). The graduate adviser’s signature is required on a number of important documents such as the student’s Program of Study, petitions related to course work, PELPs, and Advancement to Candidacy. The graduate adviser serves on the Departmental Graduate Admissions Committee, the College Graduate Study Committee, and chairs the Departmental Preliminary Exam Committee. The graduate adviser also serves as an intermediary in issues related to changing major professors.

Major Professor (Research Adviser): A student’s major professor is the faculty member who assists the student in preparing a detailed study program and in supervising the research that forms the basis for the preparation of the dissertation/thesis. The major professor serves as the chairperson of the student’s Guidance and Reading Committee (dissertation/thesis committee; see Sections I-B-4 and I-C-3 for discussion), and is in charge of the ECH 290C and 299 research course work taken; however, the major professor does not serve on the student’s qualifying examination committee (see Section IB-6). The major professor is sometimes also referred to as the student’s research adviser. Masters and doctoral students are normally advised or co-advised by a faculty member in the Department of Chemical Engineering and Materials Science; however, they may be advised by a faculty member outside the Department and/or College provided the adviser is a member of the Graduate Program in Chemical Engineering & Materials Science (see current list Addendum A) and that the student and major professor adhere to the requirements and policies set forth in this document. Specific responsibilities of major professors are outlined in Section IB-12.

B. DOCTOR OF PHILOSOPHY DEGREE IN CHEMICAL ENGINEERING

The awarding of a PhD acknowledges an individual’s ability to perform original and creative research. A graduate student pursuing a PhD should be cognizant of the fact that a PhD is not simply a matter of following the daily instructions of a major professor. A candidate for a PhD 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 PhD is also expected to communicate his/her original research in written and/or oral forms in professional venues.

1. General Requirements

The doctor of philosophy degree in chemical engineering will be awarded upon completion of the required course work described below (and approval of the program of study), passing the program PhD preliminary exam, passing the qualifying examination, and approval of a dissertation by the student's dissertation committee. The PhD program in Chemical Engineering is typically a four year program and a minimum of six quarters of academic residence is required. A student is in academic residence when enrolled in at least 4 units of approved upper division or graduate courses, including research. Enrollment in at least 4 units of upper division or graduate level courses during two summer sessions may be counted as the equivalent of one quarter of academic residence. However, students must enroll for a minimum of 12 units per quarter to be considered in full-time status. Residence for the MS degree can be used to satisfy requirements for a doctoral degree. Arrangements can also be made to satisfy part of a residence requirement by study on another campus of the University. Doctoral students are also required to serve as a TA/Al for at least two quarters during the course of their residence at Davis (the percentage of the appointment is irrelevant), and at least one of these assignments should be for one of the laboratory courses (ECH 155A, 155B, 157L, 161L). The quarters in which the student will TA are agreed upon between the student, major professor, and graduate adviser.

2. Course Work Requirements

Course work requirements for the PhD program specify a minimum of 26 units of course work in the major (Chemical Engineering) and 12 units of course work in the minor (to be selected by the student in consultation with his/her Guidance Committee) for a total of 38 units. Of the 38 units, 29 units must be in graduate courses, exclusive of seminar and research course work, and at least 30 of the 38 units must be taken at UC Davis. The minor must represent a set of coherent courses which complement the major. At least 20 of the 26 units in the major should be graduate courses and at least 9 of the 12 units of minor course work should be graduate level courses. An undergraduate course, previously taken by the student to satisfy the BS degree, cannot be used to fulfill the PhD course work requirements, however, upper division undergraduate courses which were not used to fulfill BS requirements may be applied to the PhD requirements. See Section ID for a discussion of transfer credit from other universities. The course work taken by a PhD student to satisfy these requirements is listed on the student's Program of Study (See Section IB-4 for a discussion of the Program of Study). All courses listed on the Program of Study must be taken for a letter grade. Of the 26 units of major course work, 20 units must be comprised of the following "core" graduate courses in Chemical Engineering:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECH 252</td>
<td>Statistical Thermodynamics</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>ECH 253A</td>
<td>Advanced Fluid Mechanics</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>ECH 253C</td>
<td>Advanced Mass Transfer</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>ECH 259</td>
<td>Advanced Engineering Mathematics</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>ECH 256</td>
<td>Chem Kinetics and Reaction Engineering</td>
<td>4</td>
<td>Winter</td>
</tr>
</tbody>
</table>

Courses for the minor may be selected from courses offered by the Department and/or from courses outside the Department (e.g., other Engineering Departments, Mathematics, Physics, Chemistry, Biological Sciences, etc.). All registered graduate students who have not yet advanced to candidacy must enroll in ECH 290, Seminar, each quarter during their graduate study; a passing grade will be contingent upon satisfactory attendance at the seminars. Students performing research off-site may request an exception to this requirement by writing a memo to the chair. Once a major professor has been designated, students should enroll in ECH 299, Graduate Research,
and ECH 290C, Graduate Research Group Conference. Students who enter the program with an assigned major professor may begin their research immediately. The minimum number of hours a student is expected to devote to ECH 299 courses is about three hours of research per week per unit of 299. Course 299 may also be used to prepare for the PhD preliminary evaluation or qualifying examination. ECH 290C is a one unit conference course designed to allow students to discuss their research progress with their major professor in a group setting on a regular basis. In addition, all PhD students are required to enroll in ECH 293, Graduate Student Seminar, twice during their graduate studies, typically during their second year and the third year of study. ECH 293 is a seminar course, graded satisfactory/unsatisfactory (S/U), in which graduate students present short (20 min.) presentations on their research to the faculty and graduate students. All graduate students are strongly encouraged to enroll in ECH 293 every quarter during their academic study and to attend the ECH 293 seminars on a regular basis. Students appointed by the Department of Chemical Engineering and Materials Science as teaching assistants or associate-ins are expected to enroll in the course ECH 390, Teaching of Chemical Engineering, with the professor in charge of the assigned class (1 unit graded S/U; may be repeated once for credit up to 2 units).

Courses in addition to those needed to satisfy degree or program requirements (i.e., courses not included in the Program of Study) may be taken on a satisfactory/unsatisfactory grading basis if they are exploratory in nature. However, in accordance with Graduate Council policy, only one course per quarter may be taken on this basis. Graduate credit is not allowed for a course in which a grade below "C" is received. Grades received in lower division courses (numbered 1 to 99) are not counted in determining grade-point averages. However, all upper-division 100 series course grades are included, even if the course is one normally required for a bachelor's degree and is being taken to complete background requirements. Any student may, with the consent of the appropriate graduate advisor and the Dean of Graduate Studies, repeat a course in which the student received a grade of C, D, F or Unsatisfactory up to a maximum of 9 units. In such repeated courses, only the most recently received grade and corresponding grade points shall be used in calculating a student's grade-point average, but all units attempted and grades received shall remain part of the student's permanent record. Any repeated course, except for those only offered on a S/U basis, must be taken for a letter grade (A, B, C, D, F).

3. **Selection of a Major Professor**

One of the most critical decisions that a student makes in her/his career is the selection of a major professor. The selection of a major professor and a research topic is an important decision and requires careful thought because the dissertation research is the principal activity of a graduate student, and often determines the future career directions of the student.Outlined below is the procedure to be followed:

(i) During the first week of fall quarter the program will provide all first year graduate students (FYGS) and continuing MS students with a list of topics for MS and PhD theses, and the status of funding for the listed projects.

(ii) FYGS (and continuing MS students) will make appointments to meet individually with all faculty members during fall quarter to discuss specific details of proposed research projects.

(iii) Students have until the first Friday of December to submit to the Graduate Program Coordinator a list with their first, second, and third choices for major professor and dissertation topic. The program expects all students to choose funded projects. The faculty will meet the week after the deadline to recommend major professors for the FYGS. Every effort will be made to ensure that the students receive their first choice of major professor. However, such recommendations may not always be possible, as extramural funding and the number of students who may have selected the same project must be taken into account. The program's priority is to place FYGS on funded projects because it believes it is to the student's advantage; however, the student has the option to accept or decline the program's recommendation.

(iv) If a FYGS elects to pursue an advanced degree with an unfunded project or with a major professor who is not a member of the program, then the Program Chair will inform the student in writing of the consequences such a decision will have on the financial offer made to the FYGS. However, the student may still pursue a degree in Chemical Engineering with a major professor outside the program.

4. **Guidance and Reading Committee Selection/Program of Study**

During the winter quarter of the first year, after the student has selected a major professor, the student and major professor develop a preliminary Program of Study and propose two additional faculty members to serve on
the student’s Guidance and Reading Committee (Dissertation Committee). The student should then contact these faculty to determine if they are willing to serve on this committee and discuss the proposed Program of Study with them (see Addendum B for a sample Program of Study form). With the advice of the Guidance Committee, each student develops a meaningful sequence of courses. The technical strengths and weaknesses 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 at the doctoral level. The choice of the minor field of study is determined by the student in consultation with his/her Guidance Committee. There is great flexibility in tailoring doctoral programs to meet the student’s objectives, but the College Graduate Study Committee may not approve the Program of Study if the minor field is so loosely defined that the courses lack cohesiveness, or if a large fraction of the course work is at the undergraduate level (more than three units). See page 56 of the 1998-99 Graduate and Undergraduate Engineering Bulletin for a description of the Program of Study.

The preliminary Program of Study must be submitted to the Graduate Adviser before the student can take the PhD preliminary evaluation (See Section 5 below). This should be submitted to the Graduate Adviser by the last day of winter quarter of the first year. After a student passes the PhD preliminary evaluation, they must submit a formal Program of Study which must be approved by the College Graduate Study Committee before the student can take the qualifying examination. This should be done by mid-September of the students second year. Since Chemical Engineering PhD students will normally take the qualifying exam by the end of the winter quarter of their second year, the preliminary Program of Study must demonstrate the student’s plan to complete the required course work by the end of the winter quarter of their second year.

5. Program PhD Preliminary Evaluation

The PhD preliminary evaluation is the first evaluation of prospective PhD students by the program faculty. The objective of this evaluation is to determine the probability of a student successfully completing the doctoral program. The PhD preliminary evaluation includes an evaluation of the student’s performance on an oral presentation (described below), as well as course grades and previous performance in scholarly activities. Students will declare their intent to take the preliminary examination during their first winter quarter of graduate study. A UCD GPA of 3.25 or higher is required in order to take the PhD preliminary evaluation. 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. These letters should be submitted to the Graduate Program Coordinator one week prior to the preliminary evaluation date. All FYGS, including master’s degree students, are encouraged to take the PhD preliminary evaluation so that they may elect to pursue a PhD at a later stage. Students entering in either September or January with a BS in chemical engineering should plan to take the exam in the first year.

The following procedure should be followed:

(i) By the third week of the spring quarter of the first year, students will be required to make an oral presentation of their proposed research project.

(ii) One week prior to the oral presentation, the students will be required to submit a written summary of not more than 1000 words to the Graduate Program Coordinator.

(iii) The suggested format of the oral presentation is a 15 minute, uninterrupted oral presentation by each student; 10 minutes of questions on the topic of the proposition by faculty; 15 minutes of discussion among the faculty in the absence of the student. If possible, all presentations will be held on one day. A forum of at least eight faculty members is required for each oral presentation. This group of faculty can include the major professor associated with a particular project.

(iv) The following guidelines are suggested to help students with their preparation for the preliminary exam:

(a) The oral presentation and written summary should be based on a review of what would normally be approximately three to six papers that are directly relevant to the research project of the student. The student should consult his or her adviser for direction toward a few key papers, and should then make use of additional literature as well.

(b) The student should present a coherent summary of recent progress in the area of interest. The student should clearly identify the major advances in the area, identify the papers relevant to those advances, and explain why they are important and how they relate to the proposed research. Students should not attempt to present uniformly all the information in every paper, but rather should carefully select the material that they choose to present. A comprehensive review of most
topics will not be possible in a 15 minute presentation or a 1000 word written summary. The 15 minute time limit on presentations will be strictly enforced.

(c) The oral presentation and written summary should consist of three sections that can be easily identified by the faculty: (1) the broad objectives of the proposed research; (2) a critical review of literature with an explanation of its relevance to the objectives of the proposed research; and (3) a brief explanation of the proposed experimental/theoretical methods with a tentative schedule.

(v) In making their assessment of a student's performance, the faculty will include consideration of the following factors:

(a) Each student will be assessed on their ability to review critically a portion of the literature that is relevant to their research topic.

(b) The ease with which a body of literature can be understood varies greatly from topic to topic; in particular, interdisciplinary topics will require a student to comprehend new vocabulary and terminology. Faculty will be sensitive to this issue in evaluating student progress.

(c) The performance of a student will not be based either on the technical merit of the proposed research project or on evidence of research results.

(vi) The student's performance in the oral proposition will be assigned a grade of "excellent," "good," "fair" or "poor." In addition, a written summary will be provided on the student's overall performance in both the oral and written parts of the exam. These results will be assessed along with the student's graduate and undergraduate academic transcripts in a subsequent faculty meeting. The outcome will be one of three possibilities:

(a) Student permitted to continue in the program.

(b) Recommendation of an oral re-examination on topics to be specified in advance by the faculty. These topics will be arranged on an individual basis. The oral re-examination will be less than one hour in length, must occur before the end of the spring quarter, and will be attended by at least three faculty members. Following the re-examination, these three faculty members will make a recommendation that will be reviewed at the next faculty meeting, at which time a final decision regarding continuation in the doctoral program will be made.

(c) A recommendation to Graduate Studies for a change in degree objective to master's, or for dismissal from the program.

(vii) The outcome of the oral presentation and review process will be announced in writing to each student not later than two weeks following the examination. Unless special permission is granted by the faculty, this outcome is final and the exam cannot be taken again the following year. A student has the opportunity to appeal this decision to the program and then to the Dean of Graduate Studies.

Students who have passed the program PhD preliminary evaluation and decide to stop with a MS degree must file a Change of Degree Objective Form, approved by the Graduate Adviser and Graduate Studies, and ensure that they have met degree requirements for the MS degree.

6. Qualifying Examination

After passing the PhD preliminary evaluation the student should immediately begin preparing for the qualifying examination administered by a faculty committee approved by the Dean of Graduate Studies. The qualifying examination is required at the time a student has completed (or currently enrolled in) all course work listed on the Program of Study and the Program of Study has been approved by the College Graduate Study Committee. It is designed to test the student's preparedness in the major and minor areas to pursue PhD research. The qualifying examination is normally taken at the end of the winter quarter of the second year, but no later than the end of the spring quarter of the second year. A GPA of 3.5 in graduate course work is expected (3.25 minimum) in order to take the qualifying examination. Students are encouraged to take the qualifying exam as early as possible during their second year in order to be advanced to candidacy and, if applicable, be eligible for non-resident tuition fee reduction.

Early in the summer of the second year the student should meet with his/her Dissertation Committee to discuss the proposed research and prepare the final Program of Study. The student should submit the final Program of Study (complete with all signatures) to the Graduate Program Coordinator early in the fall quarter of
the second year. This form will be submitted to the College Graduate Study Committee for approval. The student will receive a copy of their approved program. If any changes are made to the student’s program, the student must submit a revised Program of Study.

Students must complete an Application for Qualifying Examination (see Addendum C) and submit this form at least 8 weeks before the anticipated exam date. This form must be approved by Graduate Studies and the Qualifying Examination Committee formally constituted before the exam can take place. A student must not take the qualifying examination prior to receipt of the Notice of Admission to the Qualifying Examination from Graduate Studies. It takes approximately four weeks for Graduate Studies to process the application and to notify the committee members of their appointment. Application forms are available from the Graduate Program Coordinator.

The Qualifying Examination Committee ordinarily consists of five members with at least one member being appointed from outside the program; the chairperson of the committee must be a faculty member in the program. The chairperson of the Dissertation Committee may not be a member of the Qualifying Examination Committee. Students must be registered the quarter in which they 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 application will be processed and a conference room reserved. A memorandum is sent to all committee members (with a copy to the student) informing them of the final arrangements.

(i) At least one week prior to the qualifying examination, the student must submit to the Qualifying Examination Committee a dissertation proposal (approved by the major professor) including a preliminary bibliography.

(ii) The student, in consultation with the Guidance Committee, will specify several areas for examination. The qualifying examination will be limited to these areas and a critical evaluation of a dissertation proposal. Successful completion of the program PhD preliminary evaluation and an approved PhD Program of Study will be considered by the Qualifying Examination Committee to be 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.

(iii) The Qualifying Examination Committee will conduct the examination, and will immediately thereafter inform Graduate Studies and the Graduate Program Adviser of the results. Upon recommendation of the examination committee, a student who has received a “no pass” on the examination may repeat the qualifying examination once.

(iv) Upon successful completion of the qualifying examination, each student must file an official application for Advancement to Candidacy. When the form has been completed by the student and signed by the Graduate Program Adviser and Major Professor, the student pays a candidacy fee at the Cashier’s Office in Mrak Hall and returns the form to Graduate Studies.

7. The PhD Dissertation

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 prosecute independent investigation, must be approved by the Guidance and Reading Committee 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.

8. 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 the 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 Program Coordinator. At least two of the three Guidance and Reading Committee members must be in attendance.

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9. Filing the Dissertation

Filing of a dissertation with Graduate Studies is the last requirement satisfied by candidates for advanced degrees. The deadlines for completing this requirement are listed for each quarter in the campus General Catalog (available at the Bookstore). A candidate must be a regularly registered student or on filing fee status at the time of filing a dissertation, with the exception of the period between the end of the spring quarter and the beginning of the fall quarter.

10. Commencement

Graduate Studies, together with the Graduate Council and the Graduate Student Association hosts graduate commencement, always colorful and festive. The ceremony is held the evening of the last Thursday of spring quarter at the University Recreation Hall. A reception is held immediately following the ceremony for the degree recipients, candidates, faculty, family, and friends.

If you receive your graduate degree in September, December, March or in June, you are eligible and welcome to participate in commencement. If you are close to completion and will not be in Davis the following June, you are also eligible and welcome to participate. Graduate Studies will send you information about commencement in February.

11. Summary of Milestones for PhD in Chemical Engineering

The milestones described below are designed to help students finish their degree requirements for the PhD within four years. This is the framework that will be considered when making evaluations for satisfactory progress.

First Year

(i) If you are a permanent resident of the United States, but not a California resident, see the Residency Deputy located in the Registrar's Office (Mrak Hall) to file a petition (October).

(ii) Complete course work for the major, start course work for the minor (fall, winter, spring).

(iii) Select a Major Professor (December).

(iv) Set up Guidance and Reading Committee and initiate research on dissertation proposal (January).

(v) Prepare preliminary Program of Study and submit it to the Graduate Adviser (March).

(vi) Take PhD Preliminary Evaluation (April).

(vii) Continue research on dissertation topic (winter, spring, summer).

Second Year

(i) Submit Program of Study to the Graduate Program Coordinator (Sept 15).

(ii) Complete course work for the minor (fall).

(iii) Present a 20 minute seminar on dissertation research in ECH 293 (fall, winter, or spring).

(iv) Apply to take Qualifying Exam (winter quarter).

(v) Complete research proposal for Qualifying Examination (January-February).

(vi) Take PhD Qualifying Examination (winter or spring).

(vii) Meet with Guidance and Reading Committee for follow-up discussion of Qualifying Examination.

(viii) Dissertation research (fall, winter, spring, summer).

Third Year

(i) Dissertation research (fall, winter, spring, summer).

(ii) Optional course work for breadth.
(iii) Meet with Guidance and Reading Committee to consolidate dissertation objectives and discuss progress toward degree.

(iv) Present a 20 minute seminar on research in ECH 293 (fall, winter, or spring).

**Fourth Year**

(i) Complete dissertation research (fall, winter, spring).

(ii) Present exit seminar (spring).

(iii) File dissertation (spring, fall).

12. **Responsibilities of Major Professors**

(i) It is the responsibility of the major professor to honor the financial offer made to the FYGS. The Department will provide the details of the financial offer to the major professor; faculty should not accept students on unfunded projects. During a hiatus in extramural support, the major professor should consult with the Department Chair for a possible bridge loan or TA/AI funding.

(ii) The major professor must provide graduate students with specific requirements for achieving their desired degree objective. This includes advice on courses for the program of study, a method of evaluation of student progress in research, and the faculty member's expectations for time spent on research for a given number of research units. In essence, the student and the major professor should collaboratively "define success" for the project chosen. The major professor, when assigning an S/U grade for ECH 299 credits, must fill out the accompanying departmental progress form for each student. Reasons for any unsatisfactory performance on dissertation research or recommended course work should be stated clearly to the student in a written evaluation.

(iii) The major professor and graduate student should arrive at and maintain a mutually agreeable schedule of advising conferences, including an annual review on the progress, direction, and duration of the project. The result of this annual review should take the form of a written report to the student (placed in the student's file) summarizing the review.

(iv) It is the responsibility of the major professor to ensure that the objectives regarding time-to-degree, outlined in this document, are attainable. This shall include, but not be limited to, meeting with the student and the dissertation committee after the student's qualifying examination to discuss points raised by the Qualifying Examination Committee regarding the direction of the research, and meeting with the student and the Dissertation Committee after the student has been in residence for three years to discuss the progress of research and what must be accomplished to complete the degree.

(v) It is the responsibility of the major professor to inform the graduate student if extramural funding for the student's research project is in jeopardy. At least six months advance, notice should be given to the Department Chair and the student so that other funding alternatives can be explored.

13. **Responsibilities of Doctoral Students**

(i) The goal of the program is that each student should have the opportunity to complete all degree requirements (from course work to exit seminar) within twelve academic quarters (not including summers) if they enter the graduate program at Davis with a BS degree in Chemical Engineering, or nine academic quarters if they enter with an MS degree in Chemical Engineering. It is noted that individual time-to-degree goals may vary due to the very nature of advanced research and this framework should serve as a guideline under which the major professor and the student can work together toward timely completion of the dissertation requirements.

(ii) For *all* students, *satisfactory progress* consists of:
   a. taking required courses in the specified sequence (including ECH 290 and ECH 293);
   b. taking the PhD preliminary exam during the first year of residency;
c. obtaining satisfactory grades in ECH 299 and 290C;
d. taking the qualifying exam by the end of the spring quarter of the second academic year;
e. maintaining an overall GPA > 3.25 (the Department expects PhD students to maintain an overall GPA >3.5);
f. completing all degree requirements within twelve academic quarters beyond the BS or nine academic quarters beyond the MS. If a PhD project extends beyond twelve quarters, the student may still be considered as making satisfactory progress, if so determined by the major professor and the Dissertation Committee.

(iii) All students must fill out an ECH 299 advising evaluation form. These evaluations along with the instructor evaluations are to facilitate communication between the student and the adviser regarding advancement toward degree objectives.

(iv) Graduate students are encouraged to present their research routinely at research group meetings and must present results of their research in ECH 293 at least twice during the four year period.

14. Support

The departmental goal for student funding for those making satisfactory progress is to provide a stipend equivalent to a 50% RA (Research Assistant) for nine months and a 100% RA for three months during the summer. The financial offer made to the FYGS has precedence and can be achieved through a combination of RA, TA/Al (Teaching Assistant/Associate-In), Fellowship, and PGR (Post Graduate Researcher) awards. However, it is the responsibility of the major professor, not the Department, to make all possible efforts to ensure that the commitment to the graduate student is met. All domestic graduate students must fill out and submit a Federal Aid for Students Application (FAFSA) form each year. It is important to file the FAFSA as soon as possible after January 1 because awards are made on a first come, first served basis. The priority deadline for Financial Aid is March 2.

Stipends to continuing students will be made by the Department on the basis of academic and research achievements at Davis, performance of assigned duties, promise of future productivity, and the demonstration of satisfactory progress as described above. The principal source of these stipends will always be extramural funding. Obtaining such support for his or her graduate students must be a primary objective of each faculty member's research activities.

Students must make satisfactory progress toward their degree objectives to be eligible for continued support. Doctoral students in residence for more than twelve academic quarters will not be guaranteed TA/Al positions in the Department, Nonresident Tuition Fellowships (NRTF), and/or Department fellowships; preference will be given to those students in residence for less than twelve academic quarters. For those students who may be considered making satisfactory progress beyond the fourth year, support funds should come from extramural sources.

There are seven categories of support. These are administered by either the University (Graduate Studies), the Department, or individual faculty members.

Individual Faculty

Research Assistantships and Post-Graduate Researcher positions are funded through non-departmental sources, usually extramural grants and contracts.

University

University Fellowships (or Block Grant Fellowships) and Centrally Administered Fellowships for continuing students are available on a competitive basis through the Graduate Division. Nonresident Tuition Fellowships are available to incoming students and, if available, for continuing students on a competitive basis. The application deadline for these is usually January 15. Work Study Applications must be submitted by March 1.

Department
Departmental Fellowships are available to continuing students only under extraordinary circumstances. For example, in the last three years, no departmental fellowship has been available for continuing students. These funds are derived from extramural gifts to the Department and are mainly used for recruiting new students.

Teaching Assistantships (TAs), Associate-Ins (AIs), and Readerships are available. These are generally assigned on a quarter-to-quarter basis from funds allocated to the Department by the University.

If a graduate student is not meeting the major professor's expectations for timely progress toward achieving an advanced degree as reflected in poor performance reports, the major professor has the right to terminate extramural funding. However, the graduate student must be informed in writing at least three months in advance that this is being considered, and the student must be informed of the conditions that must be met to avoid termination of funding. Circumstances may arise that require funding to be terminated with less than three months notice, e.g., change of major professor, request for PELP, or gross neglect of graduate studies. If less than three months notice is to be given, the Department Chair and Graduate Adviser must be apprised by the major professor before such action is taken.

15. Changing Major Professors

The Department recognizes that under certain circumstances there may be valid reasons for a graduate student to want to change his/her major professor, e.g., lack of funding, personality conflicts, change in the direction of dissertation project, or resignation of the major professor from the faculty. If a student should choose to request a change in major professor, the Department will make every effort to be helpful and to ensure that this is not a traumatic experience for the student. However, a change in major professor may result in loss of extramural support for the student since the Department cannot always assure the student that a funded project will be available when the change in major professor is made. Furthermore, such a change may increase the time required to completion of the degree.

The following procedures should be followed when a graduate student wants to change his/her major professor:

(i) The graduate student must inform the Program Graduate Adviser in writing and give reasons for the requested change.

(ii) The Graduate Adviser must meet with the student within one week of receipt of the written notice to discuss options available to the student and the possible consequences if the request is acted on, e.g., possible change in student stipend, time-to-degree, lab space, office space, etc. The Graduate Adviser will provide the student with a written summary of these discussions, and the student must acknowledge in writing that he/she understands the implications that may result from a change in major professor. The student has one week following the meeting with the Graduate Adviser to decide whether to proceed with a change in major professor, or request mediation to resolve any conflict with the major professor. All discussions between the student and the Graduate Adviser shall be confidential to this point.

(iii) If after the Graduate Adviser has explored all the options available and discussed them with the student, the student still wants to proceed with the request, the Graduate Adviser will inform the student's current major professor and the Department Chair, and then help the student identify a new major professor. Typically this should happen no later than two weeks after the Graduate Adviser was first notified by the student.

(iv) Once a new major professor is identified, the student must be informed in writing what the dissertation topic will be, the status of extramural funding and the expected time to degree.

(v) The former major professor must be informed of the dissertation topic so that any questions regarding intellectual property rights can be addressed before the student begins research.

(vi) Concerns regarding intellectual property rights and obligations to funding agencies should be resolved by the faculty members involved before the student begins work on his/her new dissertation topic. If the faculty members cannot resolve these matters among themselves, the Department Chair will review the facts and recommend further action. This may involve the appointment of an ad hoc committee of three objective third-party members, including two possibly from other departments and one from the office of legal counsel on campus. Every effort should be made to resolve these issues expeditiously so that the student can proceed with his/her dissertation.
(vii) Once the new major professor has been assigned to the student (typically no longer than four weeks after the initial request for a change in major professor was made), all responsibility for the student's funding, laboratory space, desk space, and advising will be transferred to the new major professor. The graduate student is responsible for completing the orderly transition which may include return to the former adviser of all lab notebooks, research records and reports including computer programs, experimental data, equipment, biological materials, and lab supplies associated with the former research project. The graduate student will be allowed to have access to data and other pertinent information in the lab notebooks and/or other research records if required for dissertation preparation or for publication purposes. Upon completion of the transition tasks, the former major professor should transmit a signed note to the Graduate Adviser to notify him/her of the satisfactory completion of the transition.

(viii) The above procedures may be followed when a faculty member resigns from the Department or is unable to carry out the necessary advising responsibilities because of a serious illness, or death. If the major professor should resign and assume a position at another university, the student may have the opportunity to finish his/her research at this other university.

16. Probation and Disqualification

Graduate students are subject to probation if their progress is judged unsatisfactory in their annual review, or if, in any quarter, their cumulative grade point average is below 3.0, or if they accumulate more than 8 units of incomplete (I) or unsatisfactory (U) grades. The Dean of Graduate Studies will inform the student he/she is on probation and what must be done to return to regular status. A student is subject to disqualification if he/she cannot meet the requirements for regular status. Students cannot be advanced to candidacy if they are on probation. Disqualification of graduate students is at the discretion of the Dean of Graduate Studies as discussed in the Graduate Student Handbook.

C. MASTER OF SCIENCE DEGREE IN CHEMICAL ENGINEERING

The Master of Science degree program allows students to take advanced course work and develop the skills necessary to complete an independent research project. For the Master of Science degree, students must be in residence for a minimum of three quarters. A student is in academic residence when enrolled in at least 4 units of approved upper division or graduate courses, including research. However, students must enroll in a minimum of 12 units to be considered in full-time status. Two regular six-week summer sessions may be counted as the equivalent of one quarter. Arrangements can be made to satisfy part of a residence requirement by study on another campus of the University.

1. Course Work Requirements

A Master of Science degree may be awarded upon completion of either one of two basic plans: Plan I (thesis plan) and Plan II (non-thesis plan).

Plan I. For the Master of Science in Chemical Engineering, Plan I, a total of 36 units of course work and a thesis are required. Of these 36 units, 26 must be in upper-division and graduate courses, exclusive of seminar and research units. Twenty of the 26 units will be the five required core graduate chemical engineering courses listed in Section IB-2. These courses must be taken for a letter grade. The remaining units must be earned in upper division or graduate level courses (100 level or above), exclusive of seminar and research units. Under both Plans I and II, an undergraduate course required for the BS degree cannot be used to fulfill the MS course work requirements. However, upper division undergraduate courses which are not used to fulfill any BS requirements may be applied to the MS degree requirements. See Section 1D for a discussion of transfer credit from other universities.

Although work for the Master of Science degree can be completed in three quarters of full-time study, at least one calendar year to six quarters of full-time study is usually required to complete the MS thesis.

Plan II. Plan II requires 38 units of course work (exclusive of research and seminar courses), and passing the program PhD preliminary evaluation. The course work requirements for the Plan II MS degree are the same as those for the PhD degree (see Section IB-2).
All registered graduate students must enroll in ECH 290, Seminar, each quarter during their graduate study; a passing grade will be contingent upon satisfactory attendance at the seminars. After fall quarter of the first year, students should also enroll in ECH 299, Graduate Research and ECH 290C, Graduate Research Group Conference. The number of hours a student is expected to devote to ECH 299 courses is at least three hours of research per week per unit of 299. Course 299 may also be used to prepare for the PhD preliminary evaluation or qualifying examination. ECH 290C is a 1 unit conference course designed to allow student groups to discuss their research progress with their major professor and research group on a regular basis.

The goal of the Program is that each student should have the opportunity to complete all degree requirements (course work and thesis defense) within six academic quarters (not including summers) if they enter the graduate program at Davis with a BS degree in Chemical Engineering.

Only courses in the 100 and 200 series in which the student receives grades of "A", "B", "C" or "S" may be counted in satisfaction of the requirements for the MS degree. A course in which a student receives a "D+" or lower cannot be used to satisfy the unit requirement for the MS degree; however, it will count in determining the grade point average. Courses in the 300-400 series may be accepted if they have been approved by the Graduate Council.

Students working toward a Master of Science degree are permitted to include one course in their program taken on a satisfactory/unsatisfactory basis (other than 290C or 299 courses which are always graded on a S/U basis). This course cannot be one of the required five “core” courses for the Chemical Engineering major. For a graduate course, if a grade of "B-" or higher is received, an "S" for satisfactory is shown on the student's record. For an undergraduate course an "S" is shown on the student's record if the grade is "C-" or higher. Courses in addition to those needed to satisfy degree or program requirements may be taken on a S/U grading basis by either master's or doctoral students. However, in accordance with Graduate Council policy, only one course per quarter may be taken on this basis, and it must be exploratory in nature. Any student may, with the consent of the appropriate graduate adviser and the Dean of Graduate Studies, repeat a course in which the student received a grade of C, D, F or unsatisfactory up to a maximum of 9 units. In such repeated courses, only the most recently received grade and corresponding grade points shall be used in calculating a student's grade-point average, but all units attempted and grades received shall remain part of the student's permanent record. Any repeated course, except for those only offered on a satisfactory/unsatisfactory basis, must be taken for a letter grade (A, B, C, D, F). Graduate credit is not allowed for a course in which a grade below "C" is received. Grades received in lower division (numbered 1 to 99) courses are not counted in determining grade-point averages. However, all upper-division 100 series course grades are included, even if the course is one normally required for a bachelor's degree and is being taken to complete background requirements.

2. Selection of a Major Professor (Research Adviser)

The same guidelines as described in Sections I-B-3 and I-B-15 for initial selection and changing major professors are followed for MS students, although the choice of research projects/major professors will be different due to the more limited scope of the MS research project. If a student selects a major professor who is not a member of the Graduate Program in Chemical Engineering and Materials Science, they must still fulfill all requirements described in Section I-C-1. The student and major professor must also follow the guidelines and policies set forth in this handbook.

3. Guidance and Reading Committee Selection

The major professor serves as chairperson of this three-member committee. At least one of the Guidance and Reading Committee members must be a member of the Chemical Engineering and Materials Science Graduate Program. The committee membership is proposed by the student, in consultation with the major professor; this information is included in the Application for Advancement to Candidacy. The committee members may come from any department in the College of Engineering or outside of the College if appropriate.

4. Advancement to Candidacy

Students must file an Application for Advancement to Candidacy with Graduate Studies after completion of at least one-half of the degree requirements and at least one quarter before completion of all requirements. Application for advancement to candidacy may be made only if the GPA average is close enough to 3.0 so that if
the student is currently enrolled in course work, the successful completion will give the student the required GPA of 3.0. Even if advanced, the student must attain a minimum grade point average of 3.0 before the degree will be awarded.

5. The Master of Science Thesis

Masters students are expected to begin work on their research immediately after they have chosen a topic and 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 MS student complete course work and research in a timely manner to finish within six academic quarters.

6. Exit Seminar

The department requires that each graduate student make a presentation of their research to the departmental faculty and students before filing the thesis with Graduate Studies. Notification of the presentation must be given to faculty and students at least one week in advance; this is arranged through the Graduate Program Coordinator. At least two of the three Guidance and Reading Committee members must be in attendance.

7. Filing the Thesis

Filing of a thesis with Graduate Studies is the last requirement satisfied by candidates for advanced degrees. The deadlines for completing this requirement are listed for each quarter in the campus General Catalog (available at the Bookstore). A candidate must be a regularly registered student or on filing fee status at the time of filing a thesis, or taking a comprehensive examination with the exception of the period between the end of the spring quarter and the beginning of the fall quarter.

8. Commencement

Graduate Studies, together with the Graduate Council and the Graduate Student Association, hosts Graduate Commencement, always colorful and festive. The ceremonies are held the evening of the last Thursday of the spring quarter at the University Recreation Hall. A reception is held immediately following the ceremony for the degree recipients, candidates, faculty, family and friends.

If you receive your graduate degree in September, December, March or in June, you are eligible and welcome to participate in commencement. If you are close to completion and will not be in Davis the following June, you are also eligible and welcome to participate. Graduate Studies will send you information about Commencement in February.

9. Summary of Milestones for the MS in Chemical Engineering (Plan I)

First Year

(i) If you are a permanent resident of the United States, but not a California resident, see the Residency Deputy located in the Registrar's Office (Mrak Hall) to file a petition (October).

(ii) Complete required course work (fall, winter, spring).

(iii) Select major professor (December).

(iv) Set up Guidance and Reading Committee (January).

(v) Initiate research on thesis (winter, spring, summer).

Second Year

(i) Submit Advancement to Candidacy Application (fall).

(ii) Complete research (fall, winter, spring).

(iii) Thesis presentation (spring).
(iv) File thesis with Graduate Division (spring).

10. Responsibilities of the Major Professor (Thesis Adviser)

The responsibilities of the major professor are the same for MS students as for PhD students (see section I-B-12).

11. Responsibilities of the Student

(i) For all students, satisfactory progress consists of:

a. Taking required courses in the specified sequence and “satisfactory” performance in ECH 299 and ECH 290C.

b. Maintaining an overall GPA > 3.25 in all upper division and graduate courses taken during residence as a graduate student at UC Davis. Upper division courses needed to complete background requirements (for students entering without a Chemical Engineering degree) are included in the GPA calculation.

c. Completing all degree requirements within six academic quarters beyond the BS. (If a MS project extends beyond six quarters, the student may still be considered as making satisfactory progress, if so determined by the major professor and the Guidance and Reading Committee.)

(ii) All students must fill out an ECH 299 advising evaluation form. These evaluations, along with the instructor evaluations, are to facilitate communication between the student and the major professor regarding advancement toward degree objectives.

12. Support

Financial support for MS students follows the same guidelines and policies described for PhD students in Section I-B-14. MS students in residence for more than six academic quarters will not be eligible for TA/Al positions in the Department, NRTFs and/or Department Fellowships.

D. TRANSFER OF CREDIT FROM OTHER INSTITUTIONS

Ordinarily, all work for the graduate degree is done in residence on the Davis campus. However, with the consent of the graduate adviser and the Dean of Graduate Studies, work taken elsewhere may be credited toward the degree.

Doctoral Program

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 students Program of Study. The department requires the doctoral student to complete a minimum of 30 units of course work listed on the Program of Study to be taken at UC Davis. The limit for such transfer credit is 6 units from another institution or up to one-half of the unit requirements if earned from another campus of the University of California system, providing the units were not used in satisfaction of the requirements for another degree.

Master's Program

A student transferring to the University of California, Davis during a master's program may be allowed a maximum of 6 quarter units of credit for appropriate courses taken elsewhere. Credit so allowed cannot be used to reduce the minimum number of graduate course units (200 series) required for the master's degree. A student from another campus of the University of California may be allowed credit for up to 6 units required for a master's degree for courses taken at the other campus.

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There are additional Graduate Studies transfer credit regulations. These include:

a. Units of work taken other than at the University of California may not be used to reduce the minimum residence requirements or the 12-unit minimum requirement in the 200-series courses taken at the University.

b. Students who have been accepted into a double major program may transfer a total of 12 units overall between academic programs with the approval of the graduate adviser and the Dean of Graduate Studies.

c. Requests for transfer credit are usually done at the time of advancement to candidacy. The graduate adviser should make a request to the Dean of Graduate Studies specifying the units and courses involved.

d. Units to be so counted must have been taken at an accredited institution.

E. RESIDENCE AND REGISTRATION REQUIREMENTS

Registration Policies

Upon matriculation in a particular program, you are expected to register continuously until completion of the degree. However, leaves are readily granted for reasons such as illness, family problems, and uncertainty regarding educational goals. If you do not register, and fail to have a leave approved, you are not guaranteed readmission at a later date.

Enrollment Policies

Students are expected to enroll each quarter for an academically appropriate number of units. A minimum of 12 units of upper division or graduate courses per quarter are required to be considered a full-time student. Units of ECH 299 may be assigned for students carrying out supervised research or preparing for the PhD preliminary evaluation or the qualifying examination, and count toward the minimum 12 unit requirement.

F. FILING FEE STATUS

Doctoral and master’s candidates will normally file a final approved copy of their dissertation or thesis with Graduate Studies during their final quarter of residence on campus and must be registered at this time. Students who have completed all degree requirements, including all laboratory work and the preparation of a draft of their dissertation/thesis, and who may not require an additional quarter in residence to prepare the final dissertation/thesis manuscript, are eligible to pay a reduced fee of approximately $120 (for the filing of a dissertation/thesis or a formal final examination) rather than registering as a regular student.

To prevent abuses of the filing fee procedures, definite limitations on eligibility for the fee have been established. Students in non-registered status (PELP or Filing Fee) will be allowed one quarter of academic employment without request for exception. Exceptions beyond this one-quarter period rarely will be granted. Students are ineligible for PELP or filing fee if they are using University facilities to perform their research. Doctoral students must have completed all of their research to be eligible for filing fee status. In general, these limitations are based upon the principle that students using University facilities or faculty time, other than the time involved in the final reading of a dissertation or thesis, are not eligible to employ the filing fee procedure. Students paying only the filing fee are not registered students eligible for the privileges accorded regularly enrolled students. In particular, students using the filing fee:

1. may not make use of University educational facilities, such as the library or laboratories;
2. are not eligible for the services of the University Health Center or for University housing;
3. may not take course work of any kind;
4. may not make use of faculty time except as noted above.

Students who plan to make use of library or other facilities or to take courses must register as regular students. Students who plan to be away from the campus but in an instructional relationship with faculty members must register as regular students (a student outside the State of California may be eligible to register for
reduced fees). Students planning to take qualifying examinations for the PhD degree must register as regular students. Completion of formal course work or residency requirements does not entitle a student to apply for the filing fee unless the student will use no University facilities or faculty time except as noted above.

G. NONRESIDENT TUITION FEE REDUCTION

Effective Fall Quarter 1997 the nonresident tuition fee for PhD candidates who are not California residents and who have advanced to candidacy will be reduced by 75%. The reduced fee will be effective for three calendar years, after which nonresident enrolled students who have advanced to candidacy will be charged the full nonresident tuition fee.

H. REGISTRATION

Register Students Via Phone (RSVP), the UC Davis telephone registration system, enables students to register via touch-tone phone from anywhere in the world. The voice of RSVP prompts you to enter the information required for each transaction. Using RSVP, you can add or drop courses (including variable-unit courses), opt to take a course on a S/U grading basis, change the unit value for a variable-unit course, and hear a list of your courses, complete with locations and times. When you register through RSVP you know immediately about the status and availability of courses.

Students wishing to add courses which require instructor approval (290C, 299 and 390) must obtain the appropriate course reference number (CRN) from their major professor before calling RSVP.

ALWAYS REMEMBER: You must receive instructor approval before changing units. Failure to secure instructor approval before registering for a variable-unit course or changing units may result in disciplinary action, academic penalty, or both.

Students must register in at least 12 units each quarter during pass 1 of registration to avoid problems with financial assistance and payment of fees. The last day to drop a class is the tenth day of instruction. The last day to add a class is the fifteenth day of instruction. The last day to file for a course to be taken on a S/U basis remains at the end of the fifth week of instruction.

I. IMPORTANT DEADLINES

There are many important dates/deadlines that you need to be aware of, such as the last day to pay fees, add/drop classes, file petitions, file theses. These deadlines are listed in the General Catalog (yearly), the Graduate Guide, the Registration, Orientation and Fee Payment Information Bulletin (quarterly), and in the Class Schedule and Room Directory (quarterly). Most deadlines are also posted on various bulletin boards throughout Bainer Hall, and reminders are generally sent via e-mail. Ultimate responsibility lies with the student to be aware of impending deadlines.

II. ADMINISTRATIVE INFORMATION

A. FACILITIES

1. Office Services/Supplies

Office services associated with your research and project work should be arranged through your major professor and must be paid through a research grant. Computer facilities for Chemical Engineering and Materials Science graduate students are available in room 2061 Bainer. Major professors should be notified when a student requires office supplies for any research projects.
2. **Copy Machines**

   There are three copiers available for student use in Bainer Hall: two located in room 2151, and one in room 3151. These machines will only work with an auditor card. If your copying is related to research, the card can be obtained from your major professor. If the copying is related to teaching assistant duties, then the departmental auditor card should be checked out from the Department Office.

   Officers of student societies (AIChE, GSA) needing to use a copy machine for official business may check out the Department's auditor card.

3. **Overhead Projector/Transparencies**

   Transparency supplies are purchased by the Department for teaching only. All faculty have their own supplies for research projects. The Department does not supply students with transparencies for their own use, e.g., class work or seminar presentations. The copier machines available to students are capable of copying onto transparencies.

4. **Telephones**

   Local calls may be made from the phone in 3090 Bainer; long distance calls require an access code which is provided by your major professor. Personal calls should be made from the pay phones located in the lobbies of Bainer Hall and Engineering II, and throughout the campus. Students may not use staff phones.

5. **Fax Machine**

   The Department's fax machine is located in 3151 Bainer; the fax machine number is 530/752-1031. Use of this fax for off-campus calls requires an authorization code which should be obtained from your major professor. Incoming faxes will be placed in the recipients mail box.

6. **Graduate Student Mailboxes**

   Each Chemical Engineering graduate student will be assigned a mailbox in 3151 Bainer Hall. Be sure to check your mailbox for messages, etc. Also keep an eye on the graduate bulletin boards for flyers, and check your e-mail which is the Department's preferred method of sending notices. The door to the mail room will remain locked after business hours and on weekends; however, a key will be issued to each graduate student.

7. **Keys**

   Keys and key codes are given to each graduate student for entrance to research laboratories and the graduate mail room. Keys for Bainer, Engineering II and Everson are issued by Department staff in Bainer Hall. There is a $10.00 cash deposit required for each key, up to a maximum of $40.00. Keys must be returned before exiting the program (after you have completed your degree or go on an extended leave). *Lose your keys, lose your deposit.*

8. **Procedures for Purchasing Supplies/Materials**

   If you are working on a research project funded through a grant or contract, purchase of materials may be allowed subject to the approval of your major professor. The following steps must be taken to purchase any item:

   i. Obtain a Request for Purchase Order or Chemical Order form available in the hallway boxes directly outside the Business Office, 3092 Bainer Hall.

   ii. Fill out the appropriate form and be sure to provide catalog numbers, current prices, and telephone numbers. Carefully review the form for completeness before submitting to your major professor for signature. If the order is for a chemical, determine if a MSDS sheet is on file in your laboratory; if not, request one.
iii. Your major professor must sign the request form, thus indicating approval of the purchases, and add the funding ID number to be charged.

iv. Bring the request back to the box marked "Orders To Be Placed." Departmental approval will be obtained before placing the order. You will receive a confirmation copy in your mailbox.

v. Please allow two days for Request for Purchase Orders to be processed.

vi. Allow at least three weeks for the processing and delivery of equipment orders more than $500 as these orders must be placed by the Campus Purchasing Office.

vii. If an order is needed immediately due to an emergency, see staff in the Business Office for special procedures.

viii. Never buy supplies, no matter how small, with your own funds and expect reimbursement without first consulting the staff in the Business Office.

9. Sources of Supplies

The campus Central Stores and Receiving stocks a wide variety of small tools, lab supplies, building materials, plumbing and electrical parts, as well as chemicals. Departments must obtain supplies from the Central Stores whenever possible. When a needed item is not available from Central Stores, it may be purchased from an outside vendor. The University combines the purchasing power of the nine campuses and two laboratories to obtain pricing for system-wide contracts or campus supply/service agreements. A list of these vendors is available in the Business Office, 3092 Bainer.

10. Laboratory Services, Supplies and Equipment

The teaching laboratories and equipment in Bainer Hall are under the general supervision of our Lab Mechanic who is available to assist you with the design and development of laboratory equipment and can instruct you in the use of most equipment.

11. Departmental Computer Resources

Our Computer Resource Specialist (CRS) is responsible for all departmental computers and can answer most questions. Applications for computer accounts, requests for service or repair, as well as any suggestions for new software or hardware should be given to our CRS. The Department adheres to University policy regarding software for personal use.

The Department maintains a variety of workstations, microcomputers, and printers available for graduate student use. Microsoft Office, FORTRAN (with IMSL Library routines), Mathematica, and a variety of other scientific software packages are available on these computers. Graduate computer facilities are located in 2061 Bainer Hall. Undergraduate computer space is located in 2129B Bainer Hall. The key codes for access to these labs can be obtained from our CRS.

Operating systems include UNIX, VMS, DOS, Windows, and Macintosh System 7. Most of these workstations and computers are connected to the campus network making electronic mail and file transfer available across campus to many national and international sites.

12. Academic Computing Services (ACS)

The College of Engineering Academic Computing Services provides Engineering faculty, staff, and students with computing capabilities and technical support for program development in research and instructional software. ACS is located in the Academic Surge Building, south of Bainer Hall. ACS supports a DEC VAX 6410 computer which provides the College with ample computing power for most engineering activities. Software running on the College computer includes: DI-3000, IMSL, ACSL, CTRL-C, FORTRAN, C, and PASCAL compilers. ACS also supports two laboratories of engineering workstations including sixteen SUN IPC workstations with DOS emulators and fifteen Macintosh computers with a variety of printers and plotters.
attached. These laboratories are also connected to the campus network "backbone." ACS is managed by Tom Fortis (2-6459); support is provided by Sue Christofferson (2-7047) and Suzy Woolf (2-4038).

13. College of Engineering Shop

There is a large, well-equipped Engineering Shop in 1329 Bainer Hall staffed by professional mechanicians. Graduate students and faculty cannot use these facilities in a "hands-on" fashion, but may have work done there by the staff if funded by a research grant, with teaching related projects taking precedence over those funded by research grants. Service requests detailing whom the work is for, grant ID number or class number, and description of service requested (verbal, text, engineering drawings, sketches or product of consultation shop staff), are required. Large quantities of materials and items not common to the shop are the responsibility of the requester to provide (source consultation is available). Loan of tools and equipment is discouraged in light of the Student Shop being the source of this support as well as hands on fabrication for the college. Tool and equipment loans from the Engineering Shop require interface with shop staff, sign out in one of two such records and most important, not more than one day duration of usage.

A work order (available in the shop or from the Department’s Business Office) accompanied by appropriate specifications (usually engineering drawings or sketches) are required. All work orders must be approved by the Department Chairperson or Business Officer. Shop costs will be recharged to a research grant. If research funding is not available, the shop services cannot be used. Any exception to this rule must have the Chairperson's approval and must be arranged through a faculty member. Shop time is currently recharged at $20.00 per hour.

14. Electronic General Services (EGS)

There is an electronics shop in room 2136 Engineering II staffed by electronic technicians. The staff will consult on most digital or analog electronics or electrical problems. They can design and fabricate circuits, troubleshoot, and repair equipment. Their services are recharged to the Department. Projects should not be undertaken without the prior approval of the Department Chairperson or Business Officer.

15. Other Services

Throughout the Davis campus, there are a number of other, usually specialized, services and sources of supplies available. These include high vacuum system maintenance, glassblowing, chemical supplies, electron microscopes, digital system design and photographic services. Consult with Steve Richardson (3116 Bainer, phone 2-2509) for further details.

16. Exiting the Department

When a student is ready to file his/her thesis/dissertation, and leave the program, a departmental exit checklist should be obtained from the Graduate Program Coordinator. This will ensure all the necessary steps have been taken to tie up loose ends in the department, i.e., return keys and books, clean out desk and lab area, dispose of chemicals, erase documents from department computers, and provide a forwarding address.

B. EMPLOYMENT

1. Graduate Studies Policies Affecting Student Employment

This is an outline of Graduate Division directives, for any questions or further information, please contact the Graduate Program Coordinator.

(i) Fee Remission Policy

UC Davis policy provides for full payment of in-state fees for graduate student employees from your funding source if you hold a title of Research Assistant or Postgraduate Researcher at 25% time or more for the entire quarter. Associate-In, Teaching Assistant, and Reader titles are eligible for partial
payment of in-state fees. To be eligible for this benefit, you must be employed in one or more titles for at least 25% time for an entire quarter. (NOTE: If you qualify, it is extremely important that your paperwork is signed ON OR BEFORE the first day of the quarter or you may not be granted this benefit.) Please refer to Appendix D for more details.

(ii) Graduate Student Appointment Requirements

(a) The minimum grade point average required by Graduate Studies for Teaching Assistant, Associate-In and Research Assistant appointments is 3.0. The Department requires all students to stay above a 3.25 GPA throughout their academic career and prefers a 3.5 minimum.

(b) The number of quarters for which graduate students may be appointed to academic titles is now tied to normal academic progress. Graduate students may be appointed a maximum of twelve quarters in one or a combination of titles prior to Advancement to Candidacy for the PhD degree. After advancement, students may be appointed up to a fifteenth quarter without an exception request (if departmental policies allow).

If you hold a partial appointment in any quarter, it will be counted as a full quarter toward the twelve allowed. You may wish to decline some jobs if only a small percentage of time is possible (for instance some Reader positions) or more actively pursue a second job which would increase the percentage of time worked in a quarter to 50%.

(c) Students in nonregistered status (PELP or filing fee) will be allowed one quarter of appointment during the academic year without request for exception. Exceptions beyond this one quarter period are rarely granted by Graduate Studies.

(iii) Definitions of Student Teachers

A Teaching Assistant/Associate-In is a registered full-time graduate student chosen for excellent scholarship and for promise as a teacher, and serving an apprenticeship under the active tutelage and supervision of a regular faculty member.

(iv) Criteria for Appointments

An appointee to the title of Teaching Assistant or Associate-In must be a registered graduate student in full-time residence. Each proposed appointment or reappointment is subject to certification by the Dean of Graduate Studies that the following conditions have been met:

a. Maintenance of a 3.0 grade-point average in previous academic work. After a quarter of graduate work, the graduate record will be substituted for the candidate's undergraduate record in appraising scholarly performance.

b. Current enrollment in an adequate program of study.

(v) Terms of Appointment

(a) Student-teachers are appointed quarterly and are self-terminating unless the appointee is otherwise notified.

(b) Appointment to the title of Teaching Assistant or Associate-In may not exceed half-time, nor may such appointment in combination with other employment with the University exceed half-time. Those employed 50% time should be expected to devote, during instructional and examination periods, twenty hours per week to such work including time spent in preparation, classroom and laboratory teaching, office consultation, and reading student papers. If appointed 25% time, the total is ten hours work per week.

(c) The total length of service rendered in any one or any combination of the following titles may not exceed three years (nine quarters) prior to passing the PhD qualifying examination: Reader on annual stipend, Teaching Assistant, Research Assistant, Teaching Fellow, or Associate-In. This total length of service is independent of the percent of employment in any title, e.g., there is no distinction between a ten hour week and a twenty hour week appointment.

(vi) Conditions of Employment

Teaching Assistants/Associate-Ins are not responsible for the instructional content of a course, for selection of student assignments, for planning of examinations, or for determining the term grade for
students. Neither is the Teaching Assistant to be assigned responsibility for instructing the entire enrollment of a course or for providing the entire instruction of a group of students enrolled in a course. The Teaching Assistant is responsible only for the conduct of recitation, laboratory, or quiz sections under the active direction and supervision of a regular member of the faculty to whom final responsibility for the course's entire instruction, including the performance of Teaching Assistants, has been assigned.

2. Payroll

If you are employed by the Department, please see staff in the Student Services, 3118 Bainer Hall, to complete employment forms.

The normal payday for TAs, AIs, RAs, and PGRs is on the first day of each month. Readers are paid on the sixth working day of each month or on a bi-weekly basis. Please remember that each time your status changes it is your responsibility to sign all Personnel Action Forms (PAFs) on or before the first day of the quarter. Keep in close contact with the Department payroll staff to insure your paycheck is received on time.

Be sure to fill out a new Personal Data Form when your address changes (for tax purposes).

3. Terminal Vacation Policy

It is departmental policy to not pay students for unused accrued vacation at the time the students appointment ends. How and when vacation time is to be used must be agreed upon between the student and major professor before the student is set up on payroll.

III. WHERE TO ASK QUESTIONS AND GET HELP

A. DEPARTMENT RESOURCES

Although your major professor may be able to answer many of your general questions, when you have questions or comments regarding degree requirements, Program of Study, and/or your progress in the Chemical Engineering graduate program, you should seek the advice of the Graduate Adviser:

Professor Pieter Stroeve  
Room 3100 Bainer Hall  
752-8778

or, if necessary, the Department Chairperson:

Professor Subhash Risbud  
Room 3004 Bainer Hall  
752-5132 (for appointments)

Also please contact the graduate adviser if you are encountering any academic, personal, or financial difficulties that are disrupting your studies and affecting progress toward your degree.

The department has a qualified staff to handle all the records, administrative and bureaucratic details. See Addendum E for the Department's organizational chart.

Most of your questions, forms, committee assignments, etc., are handled by the Graduate Program Coordinator, but any form from Graduate Studies requiring the graduate adviser's signature must be signed by Professor Stroeve.
Always notify the Graduate Program Coordinator of any address or telephone changes. When leaving the department, be sure to complete the program exit form available from the Graduate Program Coordinator. Feel free to discuss any concerns or questions you may have with our staff.

B. OTHER SOURCES OF INFORMATION

Several other documents contain useful information related to academic aspects of your graduate study. These include:

**General Catalog** - Published annually, available at the Bookstore.

**Resources for Addressing Graduate Student Complaints and Grievances** - Available from Office of Graduate Studies, 252 Mrak Hall.


**Graduate Adviser’s Handbook** - Department Graduate Adviser has a copy.

**Department of Chemical Engineering & Materials Science Safety Manual** - You will be given a copy of this during your first quarter and copies are also available from the Department’s Safety Officer.

**Graduate Program Directory** - Available from Graduate Studies.

**The Graduate Guide** - Published fall & spring, available from Graduate Studies.

**GSA, The Davis Graduate** - Published monthly and sent to all registered graduate students. Also available at the Graduate Student Association Office.

**World Wide Web**

Department of Chemical Engineering and Materials Science:  http://www.chms.ucdavis.edu

Office of Graduate Studies:  http://eddie.ucdavis.edu/gspub

Course Schedules and Student Organizations:  http://www.engr.ucdavis.edu/student/student.html

Graduate Degree Requirements:  http://www.engr.ucdavis.edu/recruit/gprog.html

ADDENDA

Addendum A  Membership List for Chemical Engineering Graduate Program
Addendum B  Sample Program of Study Form
Addendum C  Department Organizational Chart
# Membership List

Graduate Program in Chemical Engineering & Materials Science

1998-99

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Department</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block, David</td>
<td>Assistant Professor</td>
<td>Vit &amp; Enol/ChEMS</td>
<td>Permanent</td>
</tr>
<tr>
<td>Boulton, Roger</td>
<td>Professor</td>
<td>Vit &amp; Enol/ChEMS</td>
<td>Permanent</td>
</tr>
<tr>
<td>Dungan, Stephanie</td>
<td>Associate Professor</td>
<td>Food Sci/ChEMS</td>
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<tr>
<td>Gates, Bruce</td>
<td>Professor</td>
<td>ChEMS</td>
<td>Permanent</td>
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<tr>
<td>Gibeling, Jeffery</td>
<td>Professor</td>
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<td>Groza, Joanna</td>
<td>Professor</td>
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<td>Higgins, Brian</td>
<td>Professor</td>
<td>ChEMS</td>
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<td>Howitt, David</td>
<td>Professor</td>
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<tr>
<td>Jackman, Alan</td>
<td>Professor</td>
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<tr>
<td>Longo, Marjorie</td>
<td>Assistant Professor</td>
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<tr>
<td>McCoy, Benjamin</td>
<td>Professor</td>
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<td>McDonald, Karen</td>
<td>Professor</td>
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<td>Mukherjee, Amiya</td>
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<td>Munir, Zuhair</td>
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<td>ChEMS</td>
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<td>Navrotsky, Alexandra</td>
<td>Professor</td>
<td>ChEMS/Chem/LAWR/Geo</td>
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<td>Palazoglu, Ahmet</td>
<td>Professor</td>
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<td>Risbud, Subhash</td>
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<td>Stroeve, Pieter</td>
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<td>Whitaker, Stephen</td>
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Print Name

CRN#  Course#

Student I.D.#

Course Description

Local Address

Graduate Major (Program)

E-Mail Address

Telephone Number

Student's Signature

Date

Approved by Graduate Program Adviser

Date

Approved by Dean of Graduate Studies

Date

It is extremely difficult to drop a course after the deadline at the end of the 10th. day. The purpose of the provision for late drops is to protect you from circumstances beyond your control. Neither academic difficulties nor missed deadlines are acceptable reasons for late drops. A $3.00 LATE DROP FEE WILL BE ASSESSED AUTOMATICALLY when the PTD has been used.

Authority for approval of late drops is assigned to the Administrative Committee of the Graduate Council. The Committee delegates to the Dean authority to approve late drops only for the eight reasons listed below. Please check the appropriate reason.

1. Illness/poor health (DOCUMENTATION FROM PHYSICIAN REQUIRED).
2. Serious personal problems (usually in association with long-term counseling in the Counseling Center - DOCUMENTATION REQUIRED.)
3. Serious accident involving student (DOCUMENTATION REQUIRED).
4. Death in immediate family (DOCUMENTATION REQUIRED).
5. Large and necessary increase in working hours (DOCUMENTATION REQUIRED).
6. Other situations deemed to be of equal gravity (DOCUMENTATION REQUIRED).
7. Departmental clerical error (DOCUMENTATION REQUIRED).
8. Other (PLEASE GIVE EXPLANATION - DOCUMENTATION MAY BE REQUIRED).

Agricultural and Biological Sciences
Ginger Jones  916/752-9292  gsjones@ucdavis.edu

Engineering, Physical Sciences & Math
Monika Ashman  916/752-2772  maashman@ucdavis.edu

Arts, Humanities, Education & Social Sciences
Cathy Jurado  916/752-9297  cjjurado@ucdavis.edu
# Program of Study for Doctoral Candidates

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<th>Name</th>
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**Title of Major: Chemical Engineering**

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<th>Prefix</th>
<th>Number</th>
<th>School</th>
<th>Term &amp; Year</th>
<th>Non UCD Units</th>
<th>UC Davis Units</th>
<th>Undergrad Units</th>
<th>Graduate Units</th>
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Total:

**Title of Minor:**

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|                                      |        |        |       |
|                                      |        |        |       |
|                                      |        |        |       |

Total:

1. __________________________________________

2. __________________________________________

Total Quarter Units: __________________________

(except 290 & 299)

UG (100) G (200)

Total UCD Quarter Units: __________________________

3. Approved by Guidance Committee (Date)

4. Reviewed by Department Advisor (Date)

5. Approved by Graduate Study Committee (Date)

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

AS, BAE, ECE, Mat Sci: Major 30 units + 1 Minor 15 units = Total 45 units.
Chem: Major 26 units + 1 Minor 12 units = Total 38 units.
CEE: Major 30 units + 2 Minors @ 15 units each = Total 60 units or Major 36 units + 1 Minor 18 units + 6 units Major or Minor = Total 60 units.
MAE: Major 30 units + 2 Minors @ 12 units each = Total 54 units or Major 36 units + 1 Minor 18 units = Total 54 units.
General Program of Study Requirements: 24 units @ UCD, 30 graduate units, 6 years ago maximum on courses. 05-23-96
APPLICATION FOR QUALIFYING EXAMINATION (Engineering, Math and Physical Sciences)

<table>
<thead>
<tr>
<th>First Name</th>
<th>Middle Name</th>
<th>Last Name</th>
<th>Student Email Address</th>
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<th>Current Mailing Address</th>
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<th>City</th>
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Major Professor

The subjects on which the applicant will be examined are:

<table>
<thead>
<tr>
<th>*Suggestions for committee to conduct the qualifying examinations are (please type or print):</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>(Professor, Assoc., Asst.)</td>
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</table>

*All Committee members listed, once approved by the Dean of Graduate Studies, must be present during the examination. A change to committee membership requires submission and approval of a Petition for Reconstitution of Committee Membership prior to the examination taking place.

FOR STUDENTS ADMITTED TO A DESIGNATED EMPHASIS ONLY

Designated Emphasis In:

Committee Member (above) who will examine for the Designated Emphasis:

Director of Designated Emphasis:

Signature

Date

FOR ENGINEERING STUDENTS ONLY

☐ Approved Program Of Study

Associate Dean of Graduate Studies, College of Engineering

Date

FOR ALL STUDENTS

I certify that the above student has completed all required course work and is prepared to take the Qualifying Examination for the degree Doctor of Philosophy.

Graduate Program Adviser

Date

FOR OFFICE OF GRADUATE STUDIES USE ONLY

Qtrs in Residence: Qtr Last Registered: Matriculation Date: GPA:

Deficiencies:

Associate Dean of Graduate Studies:

Date:
Application for Candidacy for the Degree of Doctor of Philosophy - PLAN B

NOTE: $50.00 Candidacy Fee must be paid before this form is presented to the Dean of Graduate Studies. Fee subject to change without notice.

PLEASE TYPE OR PRINT

Name:
First
Middle
Family
(Mr. or Ms.)

Social Security/Student ID Number

Present Address:
(within attending the University)
Number
Street
City
State & Zip
Telephone Number

Degree Received:
Degree
Institution
Date
Major Subject

Major Subject for the Doctor of Philosophy Degree:

Dissertation Title:

Suggestions for Dissertation Committee Members:
Name (First, Middle Initial, Last)
Academic Title
Home Department

Signature of Applicant
Date

Departmental Approvals:

Graduate Program Advisor
Date

Dissertation Chair
Date

GRADUATE STUDIES USE ONLY

Fee Paid
Full Time
Dissertation filed
G.P.A.
Otrs/Res
Requirements done
Rank/Committee
Matriculation
Degree Conferred
Deficiencies

Approved:
Dean, Graduate Studies
per
Date

Student not in spaces b