This document serves as the official graduate student handbook for outlining degree requirements and policies and procedures for completion of a PhD degree in Chemical Engineering.
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Welcome to the Chemical Engineering (ChE) program. Please read this handbook carefully, as it is your responsibility to know and to observe all procedures and requirements as defined in this handbook, in the Graduate College Policies and Procedures Manual, and the Format Manual (a guide to assist students writing theses or dissertations). Students may obtain a copy of the Graduate Policies and Procedures manual at the following website: http://graduate.asu.edu/faculty_staff/policies. The format manual may be obtained from the Graduate College online at http://graduate.asu.edu/formatmanual.

Graduate students are expected to be familiar with the Code of Conduct and to maintain the highest degree of academic integrity. Violations of the Code of Conduct or incidents of dishonesty such as cheating in examinations, cheating in laboratory work or plagiarism are subject to university discipline, whether committed by individuals or groups. The Code of Conduct can be found at: http://students.asu.edu/srr/code and the university academic integrity policy is available at http://provost.asu.edu/academicintegrity. The department is committed to providing a safe work environment for faculty, staff and students. Students who refuse to maintain a safe working environment are subject to withdrawal from the graduate program.

Per the Graduate College, registration in nine credits is considered a full-time load for graduate students. Students who are a part of the Ira A. Fulton Schools for Engineering are restricted to 12 credits per semester. However, special exceptions may be allowed to register for more than 12 credits with faculty advisor approval.

Throughout the course of their graduate careers, students will need to submit various School or program and Graduate College related forms. Students may find program or School forms on the following website: http://engineering.asu.edu/semte/GradForms.html Graduate College forms may be found on the following link: http://graduate.asu.edu/forms/index.html.

Critical Path to the Ph.D. Degree
The student must accomplish several activities in the process of acquiring the Ph.D. degree. This flowchart summarizes the chronological steps that must be followed in this process.

<table>
<thead>
<tr>
<th>CRITICAL PATH TO THE DOCTOR OF PHILOSOPHY DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain admission to the Ph.D. program</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Attend new graduate student orientation meeting</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Select advisor and begin coursework</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Initiate research</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Submit iPOS (Plan of Study) by the end of the 2nd semester</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Take the required qualifying examination and pass</td>
</tr>
</tbody>
</table>
Select the remaining members of the dissertation committee, add them to the iPOS, and begin to prepare dissertation prospectus

Complete coursework

Request to defend the dissertation prospectus and take the comprehensive examination

Successfully defend the prospectus and pass the comprehensive exam

Apply for Master’s in Passing (if applicable)

Complete research and write the dissertation

Schedule the oral defense of the dissertation with both the School and the Graduate College

Submit the dissertation for format approval

Successfully defend the dissertation and complete any revisions

Submit appropriate pass/fail paperwork to SEMTE Graduate Academic Advising office

Submit the approved dissertation to ProQuest

Return all keys and dept. property; dispose of all lab materials, samples and waste

GRADUATE

GOAL OF THE DOCTORAL PROGRAM

The Doctor of Philosophy degree is the highest university degree. It is granted to students upon evidence of excellence in research and the demonstration of independent, creative scholarship culminating in a dissertation. Coursework in the doctoral program focuses primarily on the engineering science concepts in the student's major and in certain basic sciences. The graduate research program introduces the student to the techniques, procedures and philosophical attitudes necessary for exploring unknown areas in his/her chosen profession. After receiving the degree, the student is able to identify areas within his/her major suitable for research; identify the current state of knowledge in these areas using literature search resources; propose plans for investigating the area; and apply fundamental principals to science and engineering to complete the investigation and teach these skills to others who follow. The student is taught the scientific method through in-depth study of a specific research topic. This also yields a more in-depth knowledge of his/her professional major. Often included in the graduate educational experience is an opportunity to teach undergraduates by preparing selected lectures in undergraduate courses, assisting in undergraduate laboratories or serving as tutors.
SELECTION OF A RESEARCH TOPIC/FACULTY ADVISOR

Of paramount importance to a successful doctoral program is the selection of a research faculty advisor. During the first few weeks of the fall semester, new students are required to meet with ChE graduate faculty for the purpose of selecting an advisor and exploring potential research topics. After meeting with the faculty, each student will create a rank ordered list of whom he/she would like to work (note that faculty advisors must meet the qualifications required by the Graduate College). Students should seek to select faculty advisors whose research matches their own goals and interests. Upon receiving the rank ordered lists from students, the graduate faculty will then decide the advisor assignments. Upon receiving their advisor assignments, students should begin discussing possible research topics. The selection of the research topic is the responsibility of the student. Students are urged to select a topic early in their program of study, no later than the end of the first semester in residence. Note that the program does not guarantee that a student will be selected to work on a specific project offered by a given faculty member. This is particularly true of funded research projects. Several students often desire to work on the same project in these cases. For this reason, the student should identify several projects of interest among those offered by the faculty. In some instances, students propose projects that may or may not be of interest to the faculty. The program does not require faculty to advise students on projects of this nature. In all cases, the student must obtain the agreement of a faculty member to serve as the research faculty advisor and chair of the dissertation committee. Likewise, the student is responsible for recruiting faculty to serve as members on the dissertation committee and providing confirmation that they will serve on the committee to their Graduate Academic Advisor.

The research faculty advisor works closely with the student to help plan his/her overall program and to coordinate coursework and research activities. Generally, the faculty advisor helps the student select other members of his/her dissertation committees. Frequent contact between the student and the faculty advisor is necessary to accurately define the research project. This helps to ensure that the student's research prospectus will be acceptable.

The dissertation topic can be initiated by either the student or the faculty research advisor. Most doctoral research plans include both theoretical analysis and experimental measurements. The PhD student is expected to have a major input in defining the research topic.

Research by nature is not precisely programmed. Often, well-planned experimental designs are unsuccessful. This requires the application of different procedures. For these reasons, students should initiate their dissertation research before they are able to devote full-time to the project. This helps to eliminate unnecessary delays in graduation.

Original work is required for the Doctor of Philosophy degree. One or more research publications or presentations should result from the research project. Throughout the program of study, the student is encouraged to actively participate in efforts to acquire funding in support of the faculty advisor's research program. The student should assist the research faculty advisor in the preparation of grant proposals to local, state and national agencies seeking funding for the project.
The student-faculty advisor relationship is a vital one during the PhD years, and it often continues well beyond them. Each such relationship is unique, and usually offers personal and professional benefits beyond the conduct of the PhD research. These benefits might include meeting important post-degree job contacts and advice on professional development/training in non research-related professional skills (e.g. teaching). It is expected that in most circumstances student-faculty advisor disagreements will be minor and will be amicably resolved. In the uncommon instances that attempts to resolve disagreements are unsuccessful, the student and faculty advisor are encouraged to meet with the graduate program chair for further assistance in resolving any difficulties.

Plan of Study
All incoming SEMTE graduate students will be required to submit and have an electronic Plan of Study (iPOS) approved prior to being eligible for registration for third semester classes. This means students who begin in one semester, will have a hold placed on their account before they begin their third semester, including summer, unless they have submitted their iPOS. Once students have completed the iPOS online, they will submit it to the Graduate Academic Advisor who will review it with the Graduate Program Chair and forward it to the Graduate College for final approval. The student is also responsible for obtaining signatures or email approvals of all committee members and submitting it to the Graduate Academic Advisor. Faculty advisors may approve of the iPOS electronically if a screen shot or PDF of the entire iPOS is attached to an email. The iPOS can be located on MyASU at http://myasu.edu/.

The steps for filing the iPOS are laid out here for your convenience:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Register for and complete coursework in first semester</td>
</tr>
<tr>
<td></td>
<td>Select faculty advisor and begin coursework; have faculty advisor assist with course selection for second semester registration</td>
</tr>
<tr>
<td></td>
<td>At the end of the second semester, file the iPOS through the MyASU system</td>
</tr>
<tr>
<td></td>
<td>List all coursework already completed that you wish to use towards your degree</td>
</tr>
<tr>
<td></td>
<td>List all coursework that you plan to complete to fulfill degree requirements</td>
</tr>
</tbody>
</table>
### Qualifying Examination

The Chemical Engineering Program requires all students seeking the Doctor of Philosophy degree to pass a qualifying exam. The qualifying exam is required to be taken immediately after two semesters* of RA or three semesters* of residence for students entering with regular admission to the Ph.D. program (*summer is counted as one semester). For students admitted with two or more course deficiencies, the qualifying exam is to be taken no later than the end of the fourth semester of residence. Failure to take the qualifying exam within this time period will in some circumstances be counted as a failed attempt. It is the student's responsibility to complete this examination within the deadlines. Failure in the qualifying exam is final unless the committee administering the exam recommends a re-examination and this is approved by the graduate program chair. Students failing the re-examination will be recommended for academic dismissal for not making satisfactory academic progress. Additional guidelines of this exam can be found on in Appendix I.

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<table>
<thead>
<tr>
<th>List Faculty Advisor as Committee Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add additional Committee Members to iPOS (*this may be done at a later date but must be done prior to scheduling the comprehensive exams. This is completed with a committee change request in the iPOS)</td>
</tr>
<tr>
<td>Submit iPOS through MyASU system to Graduate Academic Advisor</td>
</tr>
<tr>
<td>Obtain Faculty Advisor’s approval of iPOS courses (this may be done either with a physical signature on a printed iPOS with both the signature page and the course page or by email with the iPOS signature and coursework pages attached)</td>
</tr>
<tr>
<td>Submit Faculty Advisor’s approval to Graduate Academic Advisor for academic unit processing (*please note that it is YOUR responsibility for obtaining and submitting the faculty advisor’s approval of the iPOS and your iPOS will not be processed until the Graduate Academic Advisor has the proper approvals)</td>
</tr>
<tr>
<td>If you have added committee members to the committee, each will need to confirm their participation on the committee. This may be done either by an email to the Graduate Academic Advisor or by having them sign the iPOS approval page</td>
</tr>
<tr>
<td>In the graduation semester, verify that your iPOS has the correct committee members and courses listed. (*if your iPOS is not correct, your graduation will be delayed. Please note that this is your responsibility)</td>
</tr>
<tr>
<td>Submit any necessary changes to the iPOS through the MyASU and notify the Graduate Academic Advisor that a change is pending</td>
</tr>
</tbody>
</table>
Formation of the Dissertation Committee

No later than one month after passing the qualifying examinations, the student should appoint the entire dissertation committee. The dissertation committee consists of a minimum of five faculty members (one of whom will serve as chair). The Chair of the dissertation committee is generally the student’s research faculty advisor. The PhD dissertation committee must contain a minimum of three (3) ChE Program Graduate Faculty and among them, a minimum of two (2) must be ChE Program Faculty. Students are encouraged to consult with their research faculty advisors in selecting members of their dissertation committees. Please keep in mind the following when forming the dissertation committee:

1) At least one member must be a resident ASU faculty member outside of the Chemical Engineering Program; individuals who are not members of the ASU resident faculty may be appointed to a dissertation committee as a main or extra member. Such appointments must be consistent with quality graduate training and must be strongly recommended by the chair of the department. To obtain approval for a non-resident faculty member to serve on the committee, a Committee Approval Request and curricular vita for this individual must be submitted to the Graduate College via the student’s Graduate Academic Advisor. The Committee Approval Request can be found on the Graduate College website at: http://graduate.asu.edu/forms

2) In the case of doctoral dissertation committees, students are encouraged to select a research faculty advisor from among the regular tenured or tenure-track faculty within their major. In instances where the student selects an individual who is not a member of the Chemical Engineering Program as a research faculty advisor and chair of the dissertation committee, a co-chair must be appointed. The co-chair must be a member of the regular tenure-track faculty of the Chemical Engineering Program. When the student elects to have co-chairs, a letter outlining the responsibility of each co-chair must be submitted to the graduate program chair. Generally, one co-chair is responsible for the student's research program; the second co-chair is responsible for the student's program of study and the enforcement of departmental policies and requirements.

The dissertation committee approves the subject and title of the dissertation and it advises the student during the course of the research and the dissertation writing. The committee meets for the presentation and defense of the student's dissertation prospectus, for the oral defense of the dissertation, and upon request of the student or the committee chair to consult with the student on the progress of the research and dissertation.

Once the student has formed the dissertation committee, a committee change request should be submitted into the iPOS system to add the entire committee. It is the student’s responsibility to obtain the proof of commitment for each committee member to serve on the committee and submit it to the Graduate Academic Advisor.
Comprehensive Examination and the Dissertation Prospectus

Once the student completes coursework and has selected and listed a research faculty advisor/dissertation committee on the iPOS, he/she is required to take the Comprehensive Examination. During this exam, the student will formally present a written and an oral presentation of his/her research prospectus to the dissertation committee. Following this presentation, the student’s committee will question the student about the research and general principles within the student’s field of study. The student must request in writing to present the dissertation prospectus no later than one month prior to the proposed date for presentation of the prospectus. Two departmental forms, 1) “Report of Doctoral Comprehensive Exams” and 2) “Report of the Dissertation Proposal/Prospectus” for this purpose are provided on our forms website (http://semte.engineering.asu.edu/graduate-forms/). The dissertation prospectus should be presented within one year of passing the qualifying examination. The ChE Program will allow two years, but recommends one year. If a student does not complete the comprehensive exams within two years of passing the qualifying exam, they may be dismissed for not meeting satisfactory academic progress or may petition a request to the Graduate Committee.

Elements of the dissertation prospectus include a statement of the proposed research, a discussion of the significance of the research, a statement of the hypothesis/hypotheses to be tested, a description of the research methodology, a discussion of the specific data to be collected, a description of the means by which the data will be analyzed, and a review of safety issues related to the research. The oral presentation of the dissertation prospectus to the dissertation committee is designed to test the student's overall comprehension of the problems selected for investigation. It also provides a forum for the student to receive input and advice from experienced researchers. Approval of the prospectus implies that the proposed research is suitable for the Ph.D. degree and can be accomplished with the resources available. It does not guarantee that the student's effort in conducting the research will in all cases satisfy degree requirements. Copies of the written proposal must be distributed to all members of the student's dissertation committee no later than two weeks prior to the oral presentation of the research proposal. It is the responsibility of the candidate to write the proposal without the aid of others. A rough draft of the proposal may be shown to the student's research advisor for approval of content. The oral presentation of the dissertation prospectus is made to the student's dissertation committee. Other interested members of the faculty are invited to attend. The student's presentation should take advantage of appropriate audio visual aids and should be limited to no more than 50 minutes. Appendix I provides guidelines for conduct of the oral presentation.

Following the successful completion of the comprehensive exam, students should fill out the Report of Doctoral Comprehensive Examinations and Report of the Dissertation Proposal/Prospectus forms. Once the forms have been completed, and all signatures have been obtained, please submit the forms to the SEMTE Graduate Academic Advising office for program processing. The link to these forms can be found on our website at http://engineering.asu.edu/semte/GradForms.html. It is the student’s responsibility to obtain the proper forms and bring them to the exam period for original signatures of the entire committee.

Failure in the comprehensive examination is considered final unless the committee administering the exam and the chair of the department recommend a re-examination, and the dean of the Graduate College subsequently approves the re-examination. A re-examination may be
administered no sooner than three months and no later than one year after the date of the original examination. Only one re-examination is permitted. Students failing the re-examination will be recommended for removal from the degree program for not making satisfactory academic progress. The content and format of the comprehensive examination for the Chemical Engineering program is outlined below under specific program requirements. Successful completion of the comprehensive examination/presentation of the dissertation prospectus is necessary to achieve PhD candidacy.

**Master's Degree in Passing**

Students who are enrolled in the Ph.D. degree program in Chemical Engineering, but who do not hold a previously earned Master's degree, can obtain the Master's in Passing (MIP) upon completion of the requirements listed below. This degree is given so that students who wish to pursue the Ph.D. directly can still earn an appropriate Master's degree in Chemical Engineering.

The requirements for the Master’s in Passing are:
- 9 hours of 500-level CHE core coursework
- 15 hours of technical electives
- 6 hours of CHE 592 or 792
- 3 hours of CHE 591

Total = 33 semester hours

To be eligible for the MIP student must also successfully complete the PhD qualifying examination and the dissertation prospectus/comprehensive exam. As this degree is only available to students who are enrolled as regular PhD students in the Chemical Engineering program, all of the above requirements (including all coursework) will also be applied towards completion of PhD requirements. Once these requirements have been met, students should complete the Request for Masters in Passing form found on the Graduate College website (http://graduate.asu.edu/forms) and the Report of Final Master’s Culminating Experience form found on the program website: (http://engineering.asu.edu/semte/GradForms.html), obtain the required committee signatures, and return the forms to the SEMTE Graduate Academic Advising office. Note also that students applying for the Master's in Passing must apply for graduation in the term when they will complete the MS degree requirements and must also be enrolled for one credit hour appropriate for the MS degree.

**Admission to Candidacy**

Doctoral students are admitted to candidacy immediately after they have passed the qualifying and comprehensive examinations, approval of the dissertation prospectus, and completion of the required coursework in the program of study. The letter of candidacy is generated and prepared by the Graduate College and posted in the MyASU account.

**Dissertation Defense**

The final oral examination in defense of the dissertation is mandatory and must be held on one of the campuses of Arizona State University. It must be scheduled at least 15 working days prior to the agreed upon defense date with the program. Students must complete and submit the SEMTE Room Reservation form (found here:...)
https://docs.google.com/a/asu.edu/forms/d/1grlxdpJQgaK1NE5l4oHFXW7S2561jtcG5pZ17HTbFF0/viewform?usp=send_form), at least 15 working days prior to the student’s presentation date. After the student has received the room reservation from the program, the student must schedule the defense with the Graduate College at least 10 working days (not including holidays) prior to the agreed upon defense date through the MyASU system. The dissertation defense is administered by the student’s supervisory committee. The oral defense engages the supervisory committee and the candidate in a critical discussion of the research and findings of the study. Moreover, the defense attempts to relate the content of the thesis to the major field. The presentation of the dissertation defense in an open forum fosters a broader awareness of the state of graduate research at the university, promotes a wider scholarly dialogue among disciplines, and recognizes publicly the scholarly contributions of the candidate. The graduate advisor notifies students/faculty within the department about thesis defenses. Members of the university community are also invited to dissertation defenses through announcements published on the Graduate College website. The supervisory committee conducts a final part of its examination in closed session. The deliberation and final vote are always conducted in closed session. It is the student’s responsibility to adhere to the deadlines set forth by the Graduate College for graduation: http://graduate.asu.edu/graddeadlines.html. Failure to adhere to these strict deadlines will result in a delay of graduation and the need to register for the next term in order to graduate.

Final Requirements
After completion of the steps above, students will need to take care of the following departmental requirements:
--return all keys and departmental property.
--samples and notebooks must be turned over to the student’s research advisor.
--laboratory waste needs to be disposed of and desks need to be cleaned out.
--a current mailing address must be updated in the MyASU system in order to ensure that any following correspondence, including the mailing of the diploma, reaches the student.

Graduation
The student is eligible for graduation when program, Ira A. Fulton Schools of Engineering, and Graduate College requirements are met; the final oral examination is passed; the dissertation is approved by the dissertation committee, head of the academic unit, and the Dean of the Graduate College. Students are required to submit the dissertation to ProQuest per university policy. After the dissertation has been submitted and no additional revisions are necessary, it is the student’s responsibility to submit a copy of the defense to ProQuest.
COURSE REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

The PhD in Chemical Engineering requires completion of 84 semester hours. These hours include core/elective coursework, research/dissertation and seminar credits. Below are the specific requirements:

1) Chemical Engineering Core
The PhD program requires 9 semester hours of graduate-level Chemical Engineering courses. The following three courses (comprising these 9 hours) are required for all students:

- CHE 533 (3): Transport Processes I
- CHE 543 (3): Thermodynamics of Chemical Systems
- CHE 544 (3): Chemical Reactor Methods

2) Technical Electives
In addition to the 9 hours of core above, the Ph.D. program requires 18 semester hours of technical electives from within or outside the Program of Chemical Engineering. CHE courses meeting this requirement must be at the 520 level or higher. 400-level and 590 courses (from CHE or outside departments) may not be used to fulfill this requirement (although they may be used to satisfy #5 below). Students should consult with their supervisory committees in selecting appropriate technical elective courses.

3) Research/Dissertation
Students are required to take 12 hours of research (CHE 792) and 12 hours of dissertation (CHE 799), for a combined total of 24 hours. Note that no more than 12 hours of dissertation credit (CHE 799) may appear on a program of study. Moreover, students can only take CHE 799 once they have passed the comprehensive exam and been admitted to candidacy.

4) Seminar
Students must register for the one-credit hour seminar (CHE 591) during every semester in residence. However, only a maximum of 5 credit hours may apply to the program of study.

5) Additional Research/Elective hours
The additional 28 hours necessary to meet the 84-hour minimum may be fulfilled with any combination of additional research hours (CHE 792) and technical electives from the Chemical Engineering Program or other departments. CHE 590 (Reading and Conference) hours may also be used to fulfill this area. Note that 400-level courses in departments outside Chemical Engineering may be used to fulfill this area unless the course content significantly matches that of 300-level or lower courses in engineering. Elective courses used to meet this requirement must be approved as part of the student’s program of study.
### ChE PhD Credit Requirements

The Ph.D. degree in Chemical Engineering consists of 84 semester hours of graduate work, distributed as shown below. Students entering the program with a master’s degree may apply up to 30 credits toward the Ph.D. program of study, but must still take a minimum of 54 hours after being admitted to the Ph.D. program. If the MS has not been completed, a maximum of 12 credits of graduate work may be applied.

<table>
<thead>
<tr>
<th>Credit count</th>
<th>Admitted with BS</th>
<th>Admitted with MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master’s Degree</td>
<td>0</td>
<td>blanket 30</td>
</tr>
<tr>
<td>Core</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Seminar (must register for 591 one-credit every semester in residence)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Technical Electives</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Technical Electives and/or additional Research (to meet 84 credits)</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Research ChE 792</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Dissertation ChE 799 (max 12 hours; after passing comp)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>84</strong></td>
<td><strong>84</strong></td>
</tr>
</tbody>
</table>

*Students who have not completed a master’s degree but have taken some graduate coursework may apply up to 12 credits to the Ph.D. program of study.*
APPENDIX I

GUIDELINES FOR THE QUALIFYING EXAMINATION

The qualifying exam is designed to test a student’s ability to conduct and communicate original research like that required for a PhD dissertation. Each student will prepare a paper describing the student’s original research. The paper is limited to 10 pages of text, and 10 additional pages of references, figures, and calculations. It is expected that, after the exam, the paper will be further developed and submitted for publication with the student as first author. Students are encouraged to collaborate with their faculty advisors and research group colleagues; however, the exam paper should describe research led by the student and the paper should be the student’s own work.

The qualifying exam is required to be taken immediately after two semesters* of RA or three semesters* of residence have been completed for students entering with regular admission to the PhD program (*summer is counted as one semester). The qualifying exam is usually given at the middle of the fall and spring semesters. Thus, a student who entered the PhD program in a fall semester, was a Teaching Assistant in the fall, and was a Research Assistant in the spring and summer semesters, is expected to take the qualifying exam in the second fall semester. Failure to take the qualifying exam will be counted as a failed exam. Students enrolled in the M.S. program may take the qualifying exam before admission to the PhD program provided they have completed the CHE graduate core classes, and spent at least two semesters as a Research Assistant.

Approximately two weeks after submission of the paper, the student will meet with the Chemical Engineering Qualifying Exam Committee for an oral examination. The student should present a 20-minute summary of the paper. After the presentation, the Committee will conduct an oral examination of the student on the research presented as well as related chemical engineering principles. After this examination, the student will be informed in writing whether he/she passed or failed the exam. Students who fail the exam may retake it at the next opportunity. Students who fail the exam twice will be removed from the PhD program for not making satisfactory academic progress; these students may be able to earn a M.S., non-thesis degree.

GUIDELINES FOR THE DISSERTATION PROSPECTUS AND COMPREHENSIVE EXAM

All students in the doctoral program are required to prepare a written dissertation prospectus. This prospectus must be presented to the student's dissertation committee and orally defended. The oral defense of the dissertation prospectus is designed to test the student's overall comprehension of the problem selected for investigation and to identify weaknesses in the student's background so that appropriate coursework might be suggested. Copies of the written dissertation prospectus must be distributed to all members of the student's dissertation committee no later than one week prior to the oral presentation.
In the oral examination, the student is expected to defend the prospectus and justify that the proposed research is consistent with quality doctoral education. Following the oral presentation of the research proposition, questions are welcomed from members of the departmental faculty. Following general questions, departmental faculty other than those on the student's dissertation committee are excused and the student's dissertation committee will remain to ask questions of the candidate regarding his proposed research. The oral discussion of the dissertation prospectus is usually scheduled for three hours. If necessary, however, the proceedings may be adjourned and rescheduled for a mutually convenient date within one week. Only one adjournment is permissible.

When all of the student's dissertation committee and other interested faculty in the student's major have completed their questions, the candidate is excused from the room while the research dissertation committee conducts its deliberations. The final decision regarding whether or not the dissertation prospectus is acceptable rests solely with the dissertation committee. The student's dissertation committee conveys its evaluation of the acceptability of the dissertation prospectus to the chair of the departmental graduate committee via the forms Report of Doctoral Comprehensive Examinations and Report of the Dissertation Proposal/Prospectus found on the website: http://engineering.asu.edu/semte/GradForms.html.

GUIDELINES FOR THE DISSERTATION DEFENSE

After completing their research, students are required to submit a written dissertation and orally defend the dissertation in an open meeting. The Graduate College requires that the oral defense of the dissertation be published on the Graduate College website and publically announced to ensure that the university community is invited to attend. The oral defense of the student's dissertation is a formal occasion and the student should treat it as such by dressing appropriately and scheduling the meeting for an appropriate seminar room. It is the responsibility of the student to arrange a time mutually convenient for all committee members, for all audiovisual aids and to schedule the room location.

At the beginning of the examination, the student's research faculty advisor introduces the student and the topic of the research to the general audience. The student is then expected to present a brief seminar on the most important results of the research. The presentation should be limited to 30 minutes. Following the presentation by the student, the general audience is invited to ask questions. Following this question and answer session, the general audience is excused and the student's dissertation committee continues to question the student in depth regarding his/her research findings. The student should be prepared to defend the research methodology used in the study and the results obtained.

The oral defense of the dissertation is generally scheduled for three hours. If necessary, however, the proceedings may be adjourned and rescheduled for a mutually convenient date within one week. Only one adjournment is permissible. When the dissertation committee completes its questioning, the student is asked to leave the room and the dissertation committee discusses whether or not the student successfully defended the research and whether or not the completed dissertation is acceptable. The results are transmitted to the Graduate College on the Report for Doctoral Defense form following the approval of the Head of the Academic Unit. Immediately
after the defense, the student takes the form to the SEMTE Graduate Academic Advising office for academic unit processing. After the form has been processed at the academic unit level, the form will progress to the Graduate College.

LEVEL OF PASS OR FAIL

**Pass: No revisions.** At the conclusion of the defense, 1) the committee chair should indicate “pass,” and 2) all committee members should report the examination results at the bottom of the form as pass and sign the form. 3) Provide the *Report for Doctoral Defense* form to the SEMTE Graduate Academic Advising office for processing and then the form will progress to the Graduate College.

**Pass: Only minor format corrections need to be made** (e.g., typographical errors, pagination). At the conclusion of the defense, 1) the committee chair should indicate, “pass with minor revisions” and briefly describe needed revisions, and 2) all committee members should report the examination results at the bottom of the form and sign the form. 3) Provide the *Report for Doctoral Defense* form to the SEMTE Graduate Academic Advising office for processing and then the form will progress to the Graduate College.

**Pass with minor revisions: Significant format/editorial corrections and/or minor substantive changes need to be made** (e.g., rewrite some text, correct grammatical errors). At the conclusion of the defense, 1) the committee chair should indicate "pass with minor revisions" and briefly describe revisions, and 2) the committee members should report the examination results at the bottom of the form and sign the form. 3) The student should then bring the original signed *Report for Doctoral Defense* form to the SEMTE Graduate Academic Advising office. This office will take a copy and forward it to the Graduate College within the required allotted time. 4) The *Report for Doctoral Defense* form will then be returned to the student until his/her revisions are completed and approved. 5) The student has up to one academic year in order to make all necessary revisions. The student must be enrolled in CHE 795 until all revisions are complete. 6) Also, once revisions are completed, and the original signed *Report for Doctoral Defense* form has been signed by the Chair in section E, that the revisions are completed and approved, the original signed *Report for Doctoral Defense* form should again be brought to the SEMTE Graduate Academic Advising office. This office will make sure that Graduate College receives the *Report for Doctoral Defense* form within the required allotted time.

*Note: Once revisions are completed and approved, the student defense document must go back to gradformat@asu.edu for review.*

Student should pay attention to the deadlines for graduation on the Graduate College website: [http://graduate.asu.edu/graddeadlines.html](http://graduate.asu.edu/graddeadlines.html)

**Pass with major revisions: Significant substantive changes need to be made** (e.g., chapter rewrite). At the conclusion of the defense, 1) the committee chair should indicate, "pass with minor revisions," and briefly describe revisions, and 2) the committee
members] should report the examination results at the bottom of the form and sign the form. 3) The student should then bring the original signed Report for Doctoral Defense form to the SEMTE Graduate Academic Advising office. This office will take a copy and forward it to the Graduate College within the required allotted time. 4) The Report for Doctoral Defense form will then be returned to the student until his/her revisions are completed and approved. 5) The student has up to one academic year in order to make all necessary revisions. The student must be enrolled in CHE 795 until all revisions are complete. 6) Also, once revisions are completed, and the original signed Report for Doctoral Defense form has been signed by the Chair in section E that the revisions are completed and approved, the original signed Report for Doctoral Defense form should again be brought to the SEMTE Graduate Academic Advising office. This office will make sure that Graduate College receives the Report for Doctoral Defense form within the required allotted time.

Note: Once revisions are completed and approved, the student defense document must go back to gradformat@asu.edu for review.

Student should pay attention to the deadlines for graduation on the Graduate College website: http://graduate.asu.edu/graddeadlines.html

Fail: The basic design and/or overall execution of the study are flawed or the candidate's performance in the oral examination is seriously deficient. At the conclusion of the defense, 1) the committee chairperson should indicate, "fail", and 2) all committee members should report the examination results at the bottom of the form. If the student fails, the supervisory committee in consultation with the chair of the committee (student's research faculty advisor) formulates recommendations for future action and recommends them to the chair of the departmental graduate student affairs committee and the chair of the department. Two recommendations are possible: 1) a re-examination in the format of a new thesis defense may be scheduled following the completion of recommended activities, and a petition to the program, School, College, and Graduate College is approved 2) the research may be judged unacceptable and the student removed from the graduate program. The results of the oral defense are conveyed to the student by the chair of the supervisory committee. The form will then need to go to the SEMTE Graduate Academic Advising office for academic unit processing. The Graduate College will be notified of the defense failure.
APPENDIX II
Chemical Engineering (ChE) PhD Degree Checksheet

Core Courses: 9 credit hours
1. CHE 533 ________ 3 credit hours
2. CHE 543 ________ 3 credit hours
3. CHE 544 ________ 3 credit hours

Technical Electives: 18 credit hours
- Graduate-level courses within CHE or outside of the CHE prefix
- CHE courses must be 520 level or higher; may not be 400 level or 590
  1. ____________ 3 credit hours
  2. ____________ 3 credit hours
  3. ____________ 3 credit hours
  4. ____________ 3 credit hours
  5. ____________ 3 credit hours
  6. ____________ 3 credit hours

CHE 591 Seminar: 5 credit hours
- A maximum of 5 credit hours of CHE 591 can be applied to the (iPOS).
  1. CHE 591 ________ 1 credit hour
  2. CHE 591 ________ 1 credit hour
  3. CHE 591 ________ 1 credit hour
  4. CHE 591 ________ 1 credit hour
  5. CHE 591 ________ 1 credit hour

CHE 792 Research 12 hours
CHE 799 Dissertation 12 credit hours exactly

Additional Research/Elective Hours: 28 credit hours
- Either a blanket 30 credit hours from a previously awarded graduate degree OR
- Any combination of additional research hours (CHE 792) and technical electives from the
  CHE prefix (above 520 level), CHE 590, or a maximum of 6 credit hours of 400 level
  credits to account for the additional credit hours.

Total: 84 credits

Updated 7/27/2013
MS Degree in Chemical Engineering--Master’s in Passing Option
*only valid for PhD students who do not have a previously awarded ChE Master’s Degree

The required coursework for this degree is divided into the following categories:

A. 9 semester hours of CHE core credit (Excluding 591, 501-505, 590, and 592/599)
   a. CHE _533__ 3 hours
   b. CHE _543__ 3 hours
   c. CHE _544__ 3 hours

B. Technical Electives (Excluding 591, 501-505, 590, and 592/599)
   a. CHE_______ 3 hours
   b. CHE_______ 3 hours
   c. CHE_______ 3 hours
   d. CHE_______ 3 hours
   e. Course outside CHE prefix 3 hours

C. Research
   a. CHE 792 6 hours

D. Seminar
   a. CHE 591 1 hour
   b. CHE 591 1 hour
   c. CHE 591 1 hour

Total Hours 33 hours
APPENDIX III

Contact Information

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