

Requirements and Procedures For Graduate Degrees in Chemical Engineering at Ohio University

This document is intended to serve as a compendium of rules and regulations which will serve to inform graduate students in Chemical Engineering about their responsibilities. Each student is responsible for understanding the conditions set forth in this document and complying with them.

The Graduate Committee of the Department of Chemical and Biomolecular Engineering at Ohio University hereby endorses this document and agrees to enforce its provisions except where such actions would serve to contradict the policies of the Russ College of Engineering and Technology or Ohio University. Other variations from the rules and procedures set forth herein can only be approved by the graduate committee of the Department of Chemical and Biomolecular Engineering.

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I. Requirements and Procedures: Master of Science Degree in Chemical Engineering

I.A. Admission Status

Applications for the Master of Science (M.S.) degree program in Chemical Engineering are evaluated based upon previous course grades, standardized test scores, recommendation letters, previous fields of study, previous degrees, and the quality of the student's previous undergraduate and, if applicable, graduate program. Individuals will be admitted into the M.S. program under one of the following two categories.

I.A.1. Full Graduate Status

For students graduating with a bachelors degree in chemical engineering.

I.A.2. Special Graduate Status

For students graduating with a bachelors degree in some related field of study other than chemical engineering.

I.B. Continuation Requirements

In order to continue in the chemical engineering graduate program, a student must maintain satisfactory progress and performance in both coursework and research. A student who fails to meet a requirement in any quarter will be placed on departmental probation or dropped from the graduate program.

I.B.1. Courses

The student must maintain a cumulative GPA of at least 3.00/4.00 in each of five categories in coursework at Ohio University since entering the Chemical Engineering graduate program. The categories are (1) chemical and biomolecular engineering courses, (2) chemical and biomolecular engineering graduate courses, (3) courses listed on the student's course of study, (4) graduate courses, and (5) all courses. The course of study is described in sections 1.E. and 1.F.

I.B.2. Research

The student must maintain satisfactory, timely progress in his or her research. This includes, but is not limited to, meeting procedural requirements.

I.C. Requirements for Upgrade from Special Graduate Status to Full Graduate Status

All students receiving an M.S. degree must demonstrate, through their course work, proficiency in all of the core areas of the undergraduate chemical engineering curriculum. This includes momentum transfer, heat transfer, mass transfer, thermodynamics, kinetics, process control, statistical analysis, and process design. Students who are admitted to the program without a bachelor's degree in chemical engineering can satisfy this requirement with equivalent courses they have taken in their previous major area and/or through completion of the needed courses at Ohio University.

Students admitted under the special graduate status option will be required to take the graduate level equivalent of several undergraduate chemical engineering core courses in addition to the basic graduation requirements. Special graduate status will be upgraded to full graduate status upon the successful completion of these additional courses. The specific additional courses required will be decided on a student-by-student basis by the departmental graduate committee at the time the student first enrolls. In addition to the continuation requirements listed above, the following conditions apply with respect to the additional course work:

- i) A cumulative GPA of at least 3.00/4.00 must be maintained in the additional coursework.
- ii) No grade of less than C (2.00/4.00) is acceptable for any of the additional coursework.

I.D. Graduation Requirements

Each student must obtain full graduate status before being eligible for graduation. There are two basic options for graduation requirements:

I.D.1. Option A – Thesis

Students are required to take a minimum of 30 credit hours of courses at the graduate level excluding seminar, thesis, research, special project hours, or courses taken to make up undergraduate deficiencies. The following courses must be included: CHE 600, CHE 601, CHE 604, CHE 642, and ET 602. These account for 21 of the 31 required credit hours. The remaining 10 hours (minimum) are made up of elective courses. The elective courses are listed on the student's course of study and must be approved by both the student's thesis advisory committee and the departmental graduate committee. The thesis advisory committee may require more than 10 hours of elective courses. Additional procedural details are given in Section 1.E.

A Master's Thesis must also be completed. As part of the M.S. Thesis program students are required to take a minimum of 30 hours of thesis credit (CHE 695).

Students must also register for one hour of seminar (CHE 691) each quarter that they are enrolled until they have successfully defended the M.S. thesis (with the exception of Summer or Internship quarters).

I.D.2. Option B – Non Thesis

Students are required to take a minimum of 46 credit hours of courses at the graduate level excluding seminar, thesis, research, special project hours, or courses taken to make up undergraduate deficiencies. The following courses must be included: CHE 600, CHE 601, CHE 604, CHE 642, and ET 602. These account for 21 of the 46 required credit hours. The remaining 25 hours (minimum) are made up of elective courses. The elective courses are listed on the student's course of study and must be approved by both the student's advisor and the departmental graduate committee. The advisor may require more than 25 hours of elective courses. Additional procedural details are given in Section 1.E.

A Special Project must also be completed. As part of the Special Project requirement, students are required to take a minimum of 15 hours of research credit (CHE 681). Courses applied to the degree requirement must be approved by the student's advisor and the departmental graduate committee.

Only part-time students with significant and/or continuing industrial experience are eligible to elect Option B.

I.D.3. General Graduation Requirements for Either Option

i) A GPA of 3.00/4.00 in each of five categories in coursework at Ohio University since entering the Chemical Engineering graduate program. The categories are (1) chemical and biomolecular engineering courses, (2) chemical and biomolecular engineering graduate courses, (3) courses listed on the student's course of study, (4) graduate courses, and (5) all courses. The course of study is described in sections 1.E. and 1.F.

ii) No grade less than C (2.00/4.00) is acceptable in any course work used to satisfy any graduation requirement.

iii) No more than two grades of C+ (2.33/4.00) or lower are acceptable in any coursework used to satisfy any graduation requirement.

iv) No more than six years from the time of admission to the program can be taken to complete requirements for the M.S. degree.

I.E. Procedural Requirements for the M.S. Degree for Option A – Thesis

Failure to meet any of the deadlines listed below will automatically result in the student being placed on departmental probation (which normally includes loss of financial support) at the end of the quarter during which the infraction takes place.

I.E.1. Research Topic and Thesis Advisor

The student should propose to the departmental graduate committee both a preliminary thesis topic and a thesis advisor. The student's first three choices of thesis topics and advisors must be submitted, in writing, to the departmental graduate committee chairman during the first quarter of non-OPIE (Ohio Program of Intensive English) graduate study. (Non-OPIE graduate study is defined as any quarter in which letter-graded non-OPIE graduate courses are taken.) The choice of thesis topic and advisor must be approved by the departmental graduate committee.

I.E.2. Course of Study

The student must develop and submit for approval a course of study (form available online through the department website). The course of study should consist of a list of the courses that the student intends to take in order to satisfy graduation requirements. A tentative course of study must be approved by the thesis advisor and submitted to the departmental graduate committee during the first quarter of non-OPIE graduate study. A final course of study, along with the formal research proposal, must be approved by the thesis advisory committee and submitted to the departmental graduate committee (see items c and d below) no later than the end of the third quarter of non-OPIE graduate study. Both the tentative course of study and the final course of study must be approved by the departmental graduate committee.

Changes to the course of study require approval by the thesis advisory committee and the departmental graduate committee. A written explanation including courses dropped, courses added, and reasons for the changes must accompany the request for a change. Because alternate courses may not be accepted by the thesis advisory committee and/or the departmental graduate committee as counting towards the course requirements, it will behoove students to submit the revised course of study at their earliest opportunity.

I.E.3. Thesis Advisory Committee

A thesis advisory committee will be formed consisting of the student's thesis advisor and at least three additional faculty members. A form for this purpose is available online, and it must be submitted to the chair of the departmental graduate committee at least 20 days prior to the oral presentation of the Research Proposal (see I.E.4).

The four required members of the committee must have graduate faculty status at Ohio University, and the following guidelines must be followed:

- i) The thesis advisor must have graduate faculty status in the Department of Chemical and Biomolecular Engineering.
- ii) At least one member of the committee must have graduate faculty status in the Department of Chemical Engineering and be a full-time, permanent employee of the Department of Chemical and Biomolecular Engineering.
- iii) The Dean of the Russ College of Engineering and Technology will appoint a committee member (the "College Representative") who has graduate faculty status at Ohio University in a department outside of the Russ College and who does not hold graduate faculty status in the Department of Chemical and Biomolecular Engineering.

The advisory committee may include one additional member with associate graduate faculty status at Ohio University. Other individuals may be invited to attend the research proposal and thesis defense and to comment on the student's work, but they shall not be members of the thesis advisory committee.

It is the responsibility of the student to obtain the consent of the advisory committee members to serve on the committee and to submit to the graduate committee chair the formal research proposal and course of study after the formal research proposal and course of study have been approved by the thesis advisory committee.

Subsequent changes in the makeup of the thesis advisory committee can be made by petitioning the graduate committee. Written approval must be obtained from any advisory committee member to be removed, any advisory committee member to be added, and the thesis advisor prior to submitting a petition. The merits of a petition to modify the makeup of the advisory committee will be evaluated using the following guidelines:

i) Additions to the advisory committee may be made routinely. This will not be the case if the intention of the addition is understood by the departmental graduate committee to be to dilute the impact of current advisory committee members.

ii) Substitutions for advisory committee members who are leaving the university, retiring, taking sabbatical, or otherwise expecting to be unavailable to participate in the research will normally be granted. Students are advised to implement this substitution immediately upon learning of the current advisory committee member's unavailability.

iii) Substitutions for advisory committee members who will be temporarily unavailable at the time of the oral defense will be denied.

iv) Substitutions made in order to avoid technical disagreements between the student and a current advisory committee member will be denied.

I.E.4. Formal Research Proposal

The student will prepare a written formal research proposal. After he or she has prepared the written proposal, the student will give an oral presentation of his or her proposal before the thesis advisory committee.

The objective in preparing a formal research proposal is to demonstrate to the advisory committee and to the departmental graduate committee that the student has a clear understanding of what research is to be performed and a realistic and consistent plan to carry out the

research. The length of the written proposal is expected to be approximately ten to twenty double-spaced typewritten pages. Students are advised to review college and university policies on plagiarism. The oral presentation should take approximately twenty to thirty minutes. Visual aids should be used. See also Section IV, "Guidelines for the Formal Research Proposal."

The form (available online) naming the thesis advisory committee members must be submitted to the chair of the departmental graduate committee at least 28 days prior to the oral presentation. It is best to complete this form in consultation with the Graduate Chair. A copy of the written proposal must be in the hands of each of the advisory committee members no later than 14 days prior to the oral presentation. Each member of the thesis advisory committee must be informed of the date, time, and place of the oral presentation no later than 14 days before it is to take place.

The formal research proposal, along with the course of study, must be approved by the thesis advisory committee and submitted to the departmental graduate committee no later than the end of the third quarter of non-OPIE graduate study. The formal research proposal must be approved by the departmental graduate committee.

I.E.5. Annual Progress Meetings

The student must meet with the majority of the thesis advisory committee at least once in each calendar year. The oral presentation of the Formal Research Proposal counts as one such meeting. The Thesis Defense counts as one such meeting. If additional meetings are required, the student will prepare a 1 to 2 page summary of research progress and a 1 to 2 page summary of academic and procedural progress for each one. The department may provide a form for the academic and procedural progress report.

I.E.6. Thesis

A written thesis must be prepared describing the student's completed research work, and it must be defended orally before the thesis

advisory committee. An electronic thesis prepared according to university guidelines is required. Students are advised to review college and university policies on plagiarism. All theses will be subject to screening for plagiarism by the College and must be formally submitted to the Dean's office for this purpose prior to submission to the thesis committee. The student is personally responsible for good literary style, proper grammar, and accurate spelling. Students who may have difficulty with English construction (including, but not limited to, non-native speakers) may be required to seek professional help outside the department from the Academic Advancement Center, the OPIE program, or other sources. Members of the thesis advisory committee have the right to refuse to review the technical content of the thesis if it does not meet accepted standards of English construction.

The form (available online) to schedule the time of the oral defense must be submitted to the chair of the departmental graduate committee at least 28 days prior to the oral defense. It is suggested that this form be completed in consultation with the Graduate Chair.

The completed thesis, in "final" form, must be in the hands of each of the advisory committee members at least two weeks prior to the oral defense. "Final" form in this context refers to thesis quality; changes in the content of the thesis may still be required by the thesis advisory committee. Each member of the advisory committee must be advised of the date, time, and place of the oral defense no later than two weeks before it is to take place. Every member of the thesis advisory committee must be present at the oral defense. The thesis must be approved by both the thesis advisory committee and the departmental graduate committee.

Approval by the advisory committee will not occur if either the thesis advisor, the College Representative, or any two of the advisory committee members do not approve the thesis.

I.F. Procedural Requirements for the M.S. Degree for Option B – Non-Thesis

Failure to meet any of the deadlines listed below will automatically result in the student being placed on departmental probation (which normally includes loss of financial support) at the end of the quarter during which the infraction takes place.

I.F.1. Advisor

The student should select an academic advisor sometime before he or she has completed 15 credit hours of letter-graded course work. The advisor will help the student to choose a course of study and to develop plans for a research project. The choice of advisor must be submitted, in writing, along with the course of study, to the graduate chairman and must be approved by the advisor and by the departmental graduate committee. The advisor may be changed at a later date by submitting a revised choice to the graduate chairman. It will be considered customary for the graduate chairman to serve as the advisor in the absence of alternate intentions of the student. Once the student selects a special project, it will be considered customary for the faculty member who is directing the special project to become the student's advisor. Written notification of this change must be submitted to the graduate chairman and approved by the departmental graduate committee.

I.F.2. Course of Study

The student must develop and submit for approval a course of study (forms are available on the web). The course of study should consist of a list of the courses that the student intends to take in order to satisfy graduation requirements. The course of study must be approved by the student's advisor and submitted to the departmental graduate committee by the time the student has completed 15 credit hours of letter-graded courses. The course of study must be approved by the departmental graduate committee.

Changes to the course of study must be approved by the student's advisor and the departmental graduate committee. A written explanation including courses dropped, courses

added, and reasons for the changes must accompany the request for a change. Because it is possible that alternate courses may not be accepted as counting towards the course requirements, students should submit the revised course of study at the earliest opportunity.

I.F.3. Research Project Report

A written research project report must be prepared by the student and approved by the student's advisor and the departmental graduate committee. Students are advised to review college and university policies on plagiarism. The research project is less extensive than a thesis but still represents a substantial amount of work corresponding to 15 credit hours of course work.

II. Requirements and Procedures: Doctor of Philosophy Degree in Chemical Engineering

II.A. Admission Status

Applications for the Ph.D. degree program in Chemical Engineering are evaluated based upon previous course grades, standardized test scores, recommendation letters, previous fields of study, previous degrees, and the quality of the student's previous undergraduate and, if applicable, graduate program. Individuals will be admitted into the Ph.D. program under one of the two categories described below. The use of the term "admission" in this document refers to departmental criteria for matriculation and is not the same as "admission to candidacy" which is described in the Ohio University Graduate Catalogue and requires the formation of a dissertation committee, approval of the formal research proposal, and successful completion of the comprehensive examination.

II.A.1. Traditional Ph.D. Option

For students graduating with a masters degree in chemical engineering or a field closely related to chemical engineering.

II.A.2. Direct-to-Ph.D. Option

For students graduating with a bachelors degree in chemical engineering who desire to bypass the M.S. degree and meet the following three criteria: (1) a score on the Graduate Record Exam (GRE) quantitative section of 700 or higher, or a GPA of 3.3/4.0 or higher from an ABET-accredited chemical engineering program; (2) for students required by university or departmental policy to submit such results, a score on the Test of English as a Foreign Language (TOEFL) exceeding 590 (paper-based), 243 (computer-based), or 96 (internet-based), or the equivalent as defined by the university; (3) an undergraduate GPA of at least 3.0/4.0 or equivalent as determined by the university.

II.B. Continuation Requirements

In order to continue in the chemical engineering graduate program, a student must perform satisfactorily in courses and research. A student who fails to meet a requirement in any quarter will be placed on departmental probation or dropped from the graduate program.

II.B.1. Courses

The student must maintain a cumulative GPA of at least 3.00/4.00 in each of five categories in coursework at Ohio University since entering the Chemical Engineering Ph.D. program. The categories are (1) chemical and biomolecular engineering courses, (2) chemical and biomolecular engineering graduate courses, (3) courses listed on the student's course of study, (4) graduate courses, and (5) all courses. The course of study is described in section II.E.

In addition, the direct-to-Ph.D. student must complete the four required M.S. core courses (CHE 600, CHE 601, CHE 604, CHE642) with an average of at least 3.3/4.0 and no grade below 2.67/4.00. A direct-to-Ph.D. student who does not meet this requirement will be transferred from the direct-to-Ph.D. option to the M.S. program and must complete the M.S. before continuing to the Ph.D.

II.B.2. Research

The student must maintain satisfactory, timely progress in his or her research. This includes, but is not limited to, meeting the prescribed deadlines for procedural requirements.

II.C. Admission to the Direct-to-Ph.D. Option After Admission to the M.S. Program

Students already enrolled in the M.S. program and who wish to move into the direct-to-Ph.D. option may do so if the following conditions are met:

- i) Approval by the departmental graduate committee. The student should submit a request to be admitted to the Direct-to-Ph.D. option to the graduate committee chair.
- ii) Completion of the four required M.S. courses with an average of at least 3.3/4.0 and no grade below B– (2.67/4.0).
- iii) Successful completion of the qualifying exam.

II.D. Graduation Requirements**II.D.1. Traditional Ph.D. Option**

Additional courses beyond the masters program, consisting of at least three courses at or above the 700-level are required. Two of these must be Chemical and Biomolecular Engineering courses, and the third one can be a Chemical and Biomolecular Engineering course or a technical course chosen from those offered by other science or engineering departments. Also, all students are required to complete ET 602.

II.D.2. Direct-to-Ph.D. Option

Students must take at least 31 credit hours of courses at the graduate level plus three additional courses (typically 9 hours total) at the Ph.D. (700 or above) level. This excludes seminar or dissertation hours. The following courses must be included: CHE 600, CHE 601, CHE 604, CHE 642, and ET

602. These account for 21 of the 40 required credit hours. The remaining 19 hours (minimum) consist of 10 hours of elective courses plus the three Ph.D.-level courses.

The elective courses are listed on the student's course of study and must be approved by both the student's thesis advisory committee and the departmental graduate committee. Two of the three Ph.D.-level courses must be Chemical and Biomolecular Engineering courses, and the third one can be a Chemical and Biomolecular Engineering course or technical course chosen from those offered by other science or engineering departments. The dissertation advisory committee may require more coursework. Additional procedural details are given in Section II.E.

II.D.3. General Graduation Requirements for Either Option

- i) A Ph.D. dissertation must be completed.
- ii) A cumulative GPA of at least 3.00/4.00 in each of five categories in coursework at Ohio University since entering the Chemical Engineering Ph.D. program. The categories are (1) chemical and biomolecular engineering courses, (2) chemical and biomolecular engineering graduate courses, (3) courses listed on the student's course of study, (4) graduate courses, and (5) all courses. The course of study is described in section II.E.
- iii) No grade less than C (2.00/4.00) is acceptable in any course work used to satisfy any graduation requirement.
- iv) No more than one grade of C+ (2.33/4.00) or lower is acceptable in any coursework used to satisfy any graduation requirement.
- v) No more than seven years from the time of admission to the program can be taken to complete requirements for the Ph.D. degree.

II.E. Procedural Requirements

Failure to meet any of the deadlines listed below will automatically result in the student being placed on departmental probation (which normally includes loss of financial support) at the end of the quarter during which the infraction takes place.

II.E.1. Qualifying Exam

The qualifying exam for the Ph.D. program will be administered at least once per year. Students entering the Ph.D. program with a masters degree in chemical engineering must take the qualifying exam the first time it is offered. Students entering the Ph.D. program without a masters degree in chemical engineering must take the qualifying exam the first time it is offered following the first offering of the M.S. core course (CHE 600, 601, 604, and 642).

The qualifying exam is meant to measure the adequacy of the student's technical preparation as well as his or her aptitude and ability for continuing graduate education towards the Ph.D. degree. If a student fails to pass the qualifying exam on the first attempt, he or she may take it a second time. The exam must then be taken the very next time it is offered. The exam may be taken a maximum of two times.

Students in the Direct-to-Ph.D. option must pass the qualifying exam on the first attempt to remain in the option. If they do not pass, they will be permitted a second attempt, but they are also transferred from the Direct-to-Ph.D. option to the M.S. program and must complete the M.S. before moving on to the Ph.D.

II.E.2. Research Topic and Dissertation Advisor

The student should propose to the departmental graduate committee both a preliminary dissertation topic and a dissertation advisor. This short proposal should be in writing and must be made during the first quarter of graduate enrollment following admission at the Ph.D. level. The choice of dissertation topic and advisor must be approved by the departmental graduate committee.

II.E.3. Course of Study

The student must develop and submit for approval a course of study (forms available online). The course of study should consist of a list of the courses that the student intends to take in order to satisfy graduation requirements. A tentative course of study must be approved by the dissertation advisor and submitted to the departmental graduate committee during the first quarter after admission to the Ph.D. program.

A final course of study, along with the formal research proposal, must be approved by the dissertation advisory committee and submitted to the departmental graduate committee (see items c and d below) no later than the end of the fourth quarter after admission to the Ph.D. program. For the case of students switching from the M.S. program to the Direct-to-Ph.D. program, the deadline is the fourth quarter after admission to the M.S. program. Both the tentative course of study and the final course of study must be approved by the departmental graduate committee.

Changes to the course of study require approval by the dissertation advisory committee and the departmental graduate committee. A written explanation including courses dropped, courses added, and reasons for the changes must accompany the request for a change. Because alternate courses may not be accepted as counting towards the graduation requirements, students should submit the revised course of study at the earliest opportunity.

II.E.4. Dissertation Advisory Committee

A dissertation advisory committee will be formed consisting of the student's dissertation advisor and at least four additional faculty members. A form for this purpose is available online, and it must be submitted to the chair of the departmental graduate committee at least 28 days prior to the oral presentation of the Research Proposal (see II.E.5). It is suggested that this form be completed in consultation with the Graduate Chair.

The five required members of the committee must have graduate faculty status at

Ohio University, and the following guidelines must be followed:

- i) The dissertation advisor must have graduate faculty status in the Department of Chemical and Biomolecular Engineering.
- ii) At least two members of the committee must have graduate faculty status in the Department of Chemical and Biomolecular Engineering and be full-time, permanent employees of the Department of Chemical and Biomolecular Engineering.
- iii) The Dean of the Russ College of Engineering and Technology will appoint two committee members (the "College Representative") who have graduate faculty status at Ohio University in a department outside the Russ College and who do not hold graduate faculty status in the Department of Chemical and Biomolecular Engineering.

The advisory committee may include one additional member with associate graduate faculty status at Ohio University. Other individuals may be invited to attend the research proposal and dissertation defense and to comment on the student's work, but they shall not be members of the dissertation advisory committee.

It is the responsibility of the student to obtain the consent of the advisory committee members to serve on the committee and to submit to the graduate committee chair the formal research proposal and course of study after the formal research proposal and course of study have been approved by the dissertation advisory committee.

Subsequent changes in the makeup of the dissertation advisory committee can be made by petitioning the graduate committee. Written approval must be obtained from any advisory committee member to be removed, any advisory committee member to be added, and the dissertation advisor prior to submitting a petition. The merits of a petition to modify the makeup of the advisory committee will be evaluated using the following guidelines:

- i) Additions to the advisory committee may be made routinely. This will not be the case if the intention of the addition is understood by the departmental graduate committee to be to dilute the impact of current advisory committee members.

- ii) Substitutions for advisory committee members who are leaving the university, retiring, taking sabbatical, or otherwise expecting to be unavailable to participate in the research will normally be granted. Students are advised to implement this substitution immediately upon learning of the current advisory committee member's unavailability.

- iii) Substitutions for advisory committee members who will be temporarily unavailable at the time of the oral defense will be denied.

- iv) Substitutions made in order to avoid technical disagreements between the student and a current advisory committee member will be denied.

II.E.5. Formal Research Proposal

The student will prepare a written formal research proposal. After he or she has prepared the written proposal, the student will give an oral presentation of his or her proposal before the dissertation advisory committee.

The objective in preparing a formal research proposal is to demonstrate to the advisory committee and to the departmental graduate committee that the student has a clear understanding of what research is to be performed and a realistic and consistent plan to carry out the research. The length of the written proposal is expected to be approximately ten to twenty double-spaced, typewritten pages. The oral presentation should take approximately twenty to thirty minutes. Visual aids should be used. See also Section IV, "Guidelines for the Formal Research Proposal."

The form (available online) naming the dissertation advisory committee members must be submitted to the chair of the departmental graduate

committee at least 28 days prior to the oral presentation.

A copy of the written proposal must be in the hands of each of the advisory committee members at least 14 days prior to the oral presentation. Each member of the thesis advisory committee must be informed of the date, time, and place of the oral presentation at least 14 days before it is to take place.

The formal research proposal, along with the course of study, must be approved by the dissertation advisory committee and submitted to the departmental graduate committee no later than the end of the fourth quarter of non-OPIE graduate study. The formal research proposal must be approved by the departmental graduate committee.

II.E.6. Annual Progress Meetings

The student must meet with the majority of the dissertation advisory committee at least once in each calendar year. The oral presentation of the Formal Research Proposal counts as one such meeting. The Dissertation Defense counts as one such meeting. If additional meetings are required, the student will prepare a 1 to 2 page summary of research progress and a 1 to 2 page summary of academic and procedural progress for each one. The department may provide a form for the academic and procedural progress report.

II.E.7. Comprehensive Exam

A comprehensive written and oral exam will be administered to each student. Students are advised to review college and university policies on plagiarism and the department supplemental guidelines for the comprehensive exam (available online). The exam must be taken by the end of the sixth quarter of study following admission to the Ph.D. program. For the case of students switching from the M.S. program to the direct-to-Ph.D. program, the exam must be taken by the end of the sixth quarter of study following admission to the M.S. program.

Upon request of the student, the departmental graduate committee will assign the student a topic on which the student is to develop a

research proposal. The topic will be narrowly defined and will not be related to the student's dissertation. The responses should be as detailed and specific as possible.

The student will then have two weeks to prepare an oral report which responds to the assignment. If the oral report is satisfactory, a more detailed written report will then be due two weeks after the oral report is presented. If the written report is satisfactory, the student will have passed the exam. Students have two chances to pass the exam. The second attempt will consist of a new topic.

The oral and written portions of the exam will be evaluated using the following criteria.

- i) The response must demonstrate an ability to synthesize information from several sources and to generate a solution to an open-ended problem.
- ii) The proposal must be thorough and detailed enough to demonstrate its workability.
- iii) The proposal should be technically correct and represent state-of-the-art techniques.

II.E.8. Dissertation

A written dissertation must be prepared describing the student's completed research work and defended orally before the dissertation advisory committee. An electronic dissertation prepared according to university guidelines is required. Students are advised to review college and university policies on plagiarism. All dissertations will be subject to plagiarism screening by the College and must be submitted to the Dean's office for screening prior to submission to your committee. The student is personally responsible for good literary style, proper grammar, and accurate spelling.

Students who may have difficulty with English construction (including but not limited to non-native speakers) may be required to seek professional help outside the department from the Academic Advancement Center, the OPIE

program, or other sources. Members of the dissertation advisory committee have the right to refuse to review the technical content of the dissertation if it does not meet accepted standards of English construction.

The form (available online) to schedule the time of the oral defense must be submitted to the chair of the departmental graduate committee at least 28 days prior to the oral defense. It is suggested that this form be completed in consultation with the Graduate Chair.

The completed dissertation, in "final" form, must be in the hands of each of the dissertation advisory committee members no later than two weeks prior to the oral defense. "Final" form in this context refers to dissertation quality; changes in the content of the dissertation may still be required by the dissertation advisory committee. The dissertation must be approved and accepted, in writing, by both the dissertation advisory committee and the departmental graduate committee.

Approval by the advisory committee will not occur if either the dissertation advisor, one of the College Representatives, or any two of the advisory committee members do not approve the dissertation.

II.E.9. Special Conditions for Direct-to-Ph.D. Students

Direct-to-Ph.D. students who fail to meet the procedural requirements described above will be placed in the M.S. program and must complete the M.S. before continuing to the Ph.D.

Students in the Direct-to-Ph.D. option should register for CHE 695 "Thesis" rather than CHE 895 "Dissertation" as needed to meet university enrollment guidelines until they pass the qualifying comprehensive exam

III. Departmental Probation

A student who fails to meet a continuation or procedural requirement will be placed on departmental probation at the end of the quarter during which the deficiency occurs. Failure to meet

the GPA requirements may result in immediate removal from the graduate program.

If the condition causing the probation has not been alleviated at the end of the probationary period, the student will normally be removed from the graduate program. The probationary period may, in some cases, be extended by the departmental graduate committee.

III.A. Notification of Probation

The graduate chairman or his or her delegate will notify the student of the student's probationary status both verbally or via e-mail and in writing via U.S. or university mail within one week after the beginning of the quarter following the deficiency. A copy of each piece of correspondence will be maintained in the departmental student files.

III.B. Duration of Probation

The probationary period will normally extend for one quarter only. For the case of GPA deficiencies, summer quarter will not be counted towards this limit.

III.C. Conditions of Probation

During the probationary period the student will be ineligible for any financial support originating from the Department of Chemical and Biomolecular Engineering or the Russ College of Engineering and Technology. This includes but is not limited to departmental assistantships and Stocker Associateships and Fellowships. Normally, externally-funded support will also be withdrawn.

III.D. Petitions for Revocation or Modification of Probation

A petition to revoke the probation or modify the terms of the probation must be submitted to the graduate committee chairman within the first two weeks of the quarter during which the probation is first applied. If the graduate committee does not act upon the request during or before the third week of the quarter, the petition will be automatically granted. It is the responsibility of the petitioner to both submit the petition to the

graduate chairman and to receive the decision of the graduate committee within the allotted time periods. Appeals beyond the departmental graduate committee can be made to the chair of the Departmental of Chemical and Biomolecular Engineering and then to the Dean of the Russ College of Engineering and Technology.

III.E. Petitions for Extension of Probation

A petition to extend the probationary period for an additional quarter must be submitted to the graduate committee chairman on or before the first full day of classes for that quarter. It is the student's responsibility to know whether or not the deficiencies causing the probation have been corrected. If the graduate committee does not act upon the request on or before the third full day of classes, the petition will be automatically granted. It is the responsibility of the petitioner to both submit the petition to the graduate chairman and to receive the decision of the graduate committee within the allotted time periods.

III.F. Evaluation of Petitions

The merits of a petition to extend the probationary period, revoke the probation, or modify the terms of the probation will be evaluated using the following guidelines:

- i) Probation due to GPA deficiencies may be extended if significant progress towards correcting the deficiency is achieved.
- ii) Previous personal hardship or other extenuating circumstances may warrant granting the petition. The personal impact of withdrawal of support will not be considered.
- iii) Failure to meet the guidelines or procedures for reasons which are deemed to be beyond the control of the student will be accepted as grounds for granting the petition.
- iv) Ignorance of the procedures and requirements set forth in this document will not be considered to be grounds for granting a petition.

IV. Guidelines for the Formal Research Proposal

The formal research proposal should include, at a minimum, the following elements:

- i) Name of the student and the names of the thesis/dissertation advisory committee.
- ii) Descriptive title of the research.
- iii) A statement of the significance of the research. This should include a definition of the problem to be solved, an explanation of the importance of finding a solution, a description of the unique elements of the proposed research, and a statement describing how the engineering knowledge base is to be increased in general.
- iv) A statement of the goals and objectives of the research. The scope of the project should be defined. Explain what specific areas are to be studied and what intellectual products are expected.
- v) A brief literature search. The literature search should confirm the unique nature of the research and should show its relationship to other related work.
- vi) A statement of the planned approach. This should include a description of experiments to be completed, materials to be used, analyses to be performed, and mathematical models to be developed. Include information about the types and ranges of variables to be examined. Explain what techniques will be used to interpret the experimental results including error analysis and modeling techniques. Include sketches of the experimental apparatus to be used if appropriate.
- vii) A statement of safety and regulatory considerations. Discuss the safety procedures that will be used. Identify hazardous materials involved in the research. Explain waste disposal procedures. Address applicable standards for the

use of human subjects, animals, radioactive materials, etc.

viii) A one page executive summary of the proposed research. This should provide, for the benefit of the graduate committee, a brief but complete summary of your proposed research, including objectives, procedures, and interpretation.

V. Cover Page for Proposals

Attached is an example proposal cover page, the format of which should be followed by both M.S. and Ph.D. students when they submit their formal research proposals to their thesis/dissertation advisory committee and the departmental graduate committee. All information shown on the example cover page must be included.

**A STUDY OF AN INTEGRATED TRANSITIONAL PARADIGM
UTILIZING LEADING EDGE E-SERVICES TO LEVERAGE
CROSS-PLATFORM SYSTEMS**

by

JANE Q. STUDENT

B. S., University of Tomorrow, 2004
M.S., Jupiter Institute of Technology, 2006

PROPOSAL

Submitted in partial fulfillment of the requirements for the degree of (Master of Science/Doctor of
Philosophy) in Chemical Engineering in the
Department of Chemical and Biomolecular Engineering

Russ College of Engineering and Technology
Ohio University
2008

Athens, Ohio