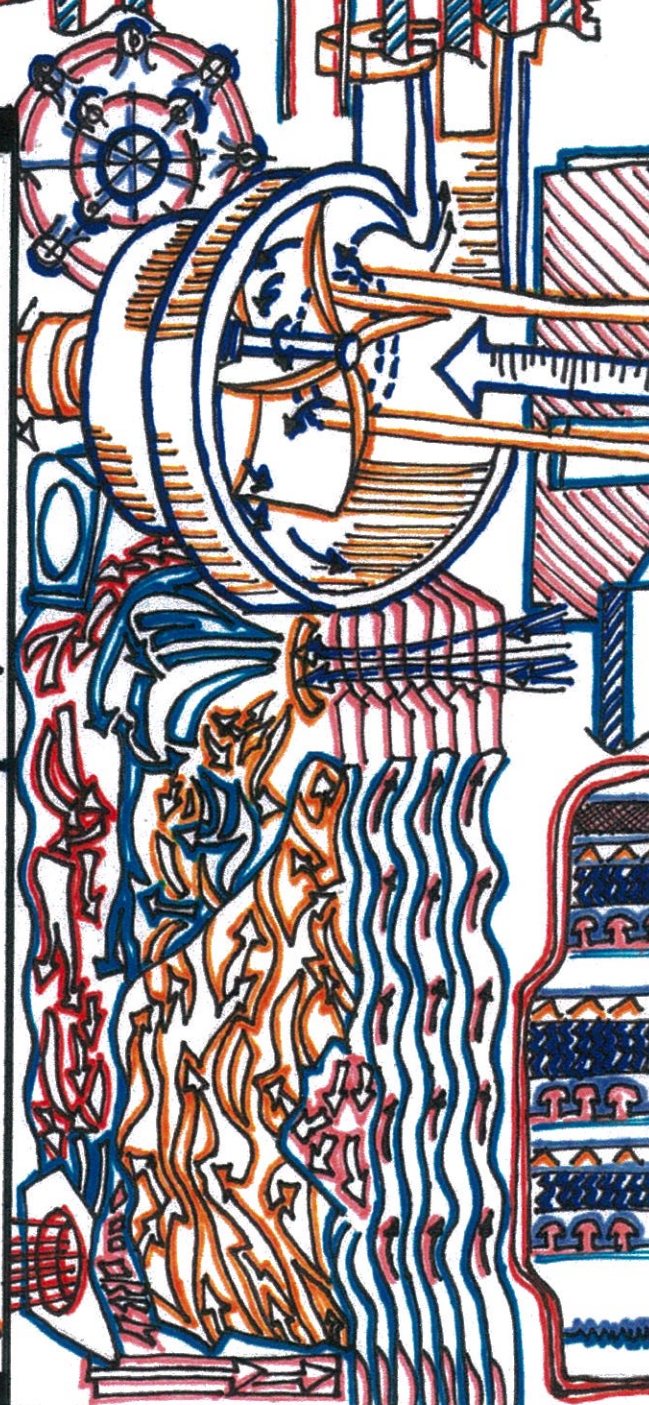


2015  
2016

# CHEMICAL ENGINEERING DEPARTMENT GRADUATE STUDENT HANDBOOK





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## **PREFACE**

The most important departmental guidelines and policies are presented in this handbook. In addition, the MIT Office of the Dean for Graduate Education's (ODGE) webpage on Graduate Policies and Procedures <http://odge.mit.edu/gpp/> and the MIT Bulletin (aka course catalog) <http://web.mit.edu/catalog/> cover Institute-wide policies, procedures, and regulations.

Graduate Committee Chair Richard D. Braatz, Academic Administrator Suzanne Maguire, Academic Services Coordinator Joel Dashnaw, and Academic Services Coordinator Sydney Greenley-Kois are valuable sources of information and support for graduate students. If you have special problems or questions at any time during your graduate school experience, we encourage you to contact Suzanne (room 66-366, (617)253-4577, [easterly@mit.edu](mailto:easterly@mit.edu)), Joel (room 66-366, (617)253-4579, [jdashnaw@mit.edu](mailto:jdashnaw@mit.edu)), or Sydney (room 66-366, (617)452-2162, [sydneyg@mit.edu](mailto:sydneyg@mit.edu)) in the Student Office, or Prof. Braatz (room E19-551, (617)253-3112, [braatz@mit.edu](mailto:braatz@mit.edu)).

Academic policy for graduate students is the responsibility of the Graduate Committee, and students should feel free to consult with its members at any time.

## **Graduate Committee**

Prof. Richard D. Braatz (Chair)	E19-551	(617)253-3112	<a href="mailto:braatz@mit.edu">braatz@mit.edu</a>
Prof. Martin Z. Bazant (sabbatical)	66-458b	(617)324-2036	<a href="mailto:bazant@mit.edu">bazant@mit.edu</a>
Prof. Daniel Blankschtein	66-442B	(617)253-4594	<a href="mailto:dblank@mit.edu">dblank@mit.edu</a>
Prof. T. Alan Hatton	66-370A	(617)253-4588	<a href="mailto:tahatton@mit.edu">tahatton@mit.edu</a>
Prof. Allan S. Myerson	E19-502D	(617)452-3790	<a href="mailto:myerson@mit.edu">myerson@mit.edu</a>
Prof. Yuriy Román	66-558b	(617)253-7090	<a href="mailto:yroman@mit.edu">yroman@mit.edu</a>
Prof. Michael S. Strano	66-566	(617)324-4323	<a href="mailto:strano@mit.edu">strano@mit.edu</a>

## **ADVISORS**

For incoming first-year graduate students, academic advisors are members of the Graduate Committee. Prof. Richard D. Braatz is the academic advisor for students in the PhDCEP program (see page 14). Prof. Bradley D. Olsen is the academic advisor for students in the PPSM program (see page 34). Prof. T. Alan Hatton manages the Practice School and is the academic advisor for MSCEP students (see

page 37). Prof. Paul Barton is the academic advisor for students in the CSE PhD program (see page 35).

Students join a research group at the end of their first fall semester in the Department, at which point their research supervisor becomes the student's academic advisor. Should the student choose a research advisor from another department, they will also need a co-advisor from the Chemical Engineering faculty who is prepared to assume sole advisory responsibility if, for some reason, the relationship with the non-departmental research advisor ends. Students are responsible for informing the Student Office in writing of any change in advisor(s).

Prior to Registration Day (both fall and spring semesters), pre-registration subject selection must be made online, and then approved by the advisor, online. Advisor approval should be obtained for any subsequent add or drop of subjects during the term (no additional authorization is required).

### **SUBJECT REQUIREMENTS**

The philosophy of the Department is to encourage students to develop an in-depth understanding of the fundamental concepts of Chemical Engineering while, at the same time, broadening their perspective by sampling other more specialized subjects.

PhD/ScD students must complete

1. Chemical Engineering Thermodynamics (10.40)
2. Analysis of Transport Phenomena (10.50)
3. Chemical Reactor Engineering (10.65)
4. Numerical Methods Applied to Chemical Engineering (10.34)
5. One graduate subject in Chemical Engineering (Course 10); for a description of the Course 10 Electives, see <http://web.mit.edu/catalog/>
6. Departmental Biology Requirement (see page 28)
7. Departmental Minor Requirement (see page 28)

No elective course taken to satisfy the MSCEP can be used to satisfy the elective requirement of the PhD/ScD.

PPSM students must complete

1. The PPSM core curriculum
2. One graduate subject in Chemical Engineering (Course 10); for a description of the Course 10 Electives, see <http://web.mit.edu/catalog/>
3. Departmental Minor Requirement (see page 28)

CSE PhD students must complete

1. Chemical Engineering Thermodynamics (10.40)
2. Analysis of Transport Phenomena (10.50)
3. Chemical Reactor Engineering (10.65)
4. Numerical Methods Applied to Chemical Engineering (10.34)
5. One graduate subject in Chemical Engineering (Course 10); for a description of the Course 10 Electives, see <http://web.mit.edu/catalog/>
6. Departmental Biology Requirement (see page 28)
7. Five graduate-level subjects from the Center for Computational Engineering (CCE) approved list of computational science and engineering subjects (<http://cce.mit.edu/cse>)

PhDCEP students must complete

1. Chemical Engineering Thermodynamics (10.40)
2. Analysis of Transport Phenomena (10.50)
3. Chemical Reactor Engineering (10.65)
4. Numerical Methods Applied to Chemical Engineering (10.34)
5. Systems Engineering (10.551)
6. One graduate subject in Chemical Engineering (Course 10) in applied process chemistry (see page 38)
7. Departmental Biology Requirement (see page 28)

Twenty-four thesis credit units are required for PhD/ScD, PhDCEP, and PPSM. Students registering for a thesis degree must specify a minimum of one credit unit each semester, but typically, the thesis credit is adjusted to yield a total load of 36 credit units for research assistants and teaching assistants (not including 10.990/10.991/10.992 or other 10.9XX research seminars).

MSCEP students must complete

1. Chemical Engineering Thermodynamics (10.40)
2. Analysis of Transport Phenomena (10.50)
3. Chemical Reactor Engineering (10.65)
4. Numerical Methods Applied to Chemical Engineering (10.34)
5. Systems Engineering (10.551)
6. Introduction to Chemical Engineering Research (10.990)
7. One graduate subject in Chemical Engineering (Course 10) in applied process chemistry (see page 38)

SM students must complete

1. Chemical Engineering Thermodynamics (10.40)
2. Analysis of Transport Phenomena (10.50)
3. Chemical Reactor Engineering (10.65)
4. Numerical Methods Applied to Chemical Engineering (10.34)
5. Additional requirements on page 39

### **GRADING POLICY ON SUBJECTS TAKEN TO SATISFY A DEPARTMENTAL REQUIREMENT**

Doctoral candidates are expected to receive a grade of “B-” or higher in any subject taken to satisfy a departmental Requirement, including:

- Four Core Subjects: 10.34, 10.40, 10.50, and 10.65
- One graduate-level Chemical Engineering (Course 10) Elective
- Minor Requirement
- Biology Requirement
- Systems Engineering: 10.551 (required for PhDCEP and MSCEP students)

A graduate student can retake a subject only once in order to get a grade of “B-” or higher.

## **ENGLISH EVALUATION TEST**

From 9 am to 12 pm on **September 1, 2015**, entering international graduate students are required to take the English Evaluation Test, which identifies weaknesses in communication skills that may interfere with coursework, teaching, and research at MIT (<https://mitgsl.mit.edu/academics-courses/english-evaluation-test-eet>). Any remedial English course specified by the results of the test must be taken in the entering fall semester.

## **FINANCIAL SUPPORT**

Graduate students receive financial assistance in the form of fellowships, research assistantships, or teaching assistantships.

- **Fellowships**

Fellowship funds come from two general sources — outside or inside the Institute. Examples of outside fellowships include: NSF, DOE, Hertz, NIH, EPA, GEM, Kodak, Lucent, NASA, and Whitaker Fellowships. The MIT Office of the Dean for Graduate Education (room 3-138) has a more complete listing of fellowship information. Fellowships from MIT funds are typically limited to first-year graduate students. Funds for such awards are usually provided from gifts from alumni, from unrestricted industrial grants, or from the Provost's Office in the form of Presidential Fellowships. For more information, please visit the Financial Aid Office website [http://web.mit.edu/sfs/financial\\_aid/graduate\\_financial\\_aid.html](http://web.mit.edu/sfs/financial_aid/graduate_financial_aid.html).

Graduate students supported with a departmental Fellowship have no limitations with regard to credit units that they may take. As a guideline, however, a full course load is considered to be 36 credit units each semester. The recipient of a departmental Fellowship is under no obligation, either real or implied, to the donor of the fellowship, other than to carry out their program of studying and research in a diligent manner.

Recipients of outside fellowships should check with the coordinating official in the MIT Office of the Dean for Graduate Education (room 3-138) to determine any obligations regarding their fellowships.



The recipient of a fellowship is allowed two weeks of vacation per calendar year (excluding Institute holidays). Vacation schedules must be approved by the supervisor(s). Additional vacation time is allowed only with the permission of the research advisor(s).

- **Research Assistants**

Research Assistants (RAs) are supported from research contracts or grants, and are supervised by research advisor(s) who have a responsibility to the funding organization to conduct research in specified areas.

In most cases, an appointment as a RA coincides with the selection of a research topic and research advisor(s). In other words, the student declares that their thesis will be conducted in the area specified in the research project's grant (contract). Such RAs may register for no more than 36 credit units, including thesis, each semester (note that registration in research seminars in the 10.9XX series is not included in this total).

In a few cases, students may be assigned as a RA to a project where there is an agreement between the student and the research advisor(s) that the work will not be used as part of the thesis. The 36-credit unit maximum noted previously is still in effect. However, no academic credit is given for the research assistant appointment in that case. A typical time commitment to this type of research project would be 20 hours per week.

PhDCEP students are not allowed to serve as an RA, or to be funded via an RA, during their time at Sloan.

A RA is allowed two weeks of vacation per calendar year (excluding Institute holidays). Vacation schedules must be approved by the supervisor(s). Additional vacation time is allowed only with the permission of the research advisor(s).

- **Teaching Assistants/Graduate Instructors**

Teaching Assistants (TAs) play a central role in the Department's educational program. Service as a TA, working closely with one or more faculty members in the Department, is an important

and beneficial aspect of the graduate school experience. Each TA is assigned to a specific undergraduate or graduate subject. TA duties include

- Developing and grading homework and exam problems
- Grading laboratory reports
- Holding regular office hours for individual students as well as for group-help sessions
- Planning, designing, and supervising laboratory experiments
- Proctoring exams
- Maintaining a subject website
- Preparing electronic and/or hard-copy versions of the course materials for the Student Office

Some opportunities exist for students interested in gaining teaching experience to serve as a Graduate Instructor, otherwise known as an “Instructor G” (IG). Interested students should first contact the faculty member teaching the class to determine if there is a possibility to serve as an IG. The faculty member should then contact the Executive Officer, Pat S. Doyle, to discuss the appointment. Typically, students who can expect to compete successfully for an appointment as an Instructor G should have had exceptional performance in prior service as a TA and have interest in an academic career.

TA assignments are made at least one month before the beginning of the fall and spring semesters. In some cases, enrollment-driven, last-minute TA assignments are necessary. All doctoral students are expected to volunteer for possible service as a TA at the time of the presentation of their Thesis Proposal (see page 18). Two different semesters of availability for the TA pool are selected by the student at that time. The Department then chooses one of these two semesters for the TA service. It is the responsibility of the student to coordinate the selection of the two semesters with their research advisor(s). The early identification of possible periods of TA service allows for effective planning by students and research advisors of activities related to the thesis project. Students should complete their TA service before the end of their fourth year.

At the conclusion of the TA assignment, a meeting should take place between the TA and the course instructor(s) to evaluate the TA performance in the course. A Departmental TA Evaluation Form (<https://cheme-forms.mit.edu>) should be completed and submitted online by the course instructor(s) and by the TA at the time of the meeting. Also at the conclusion of the TA assignment, the TA must submit an electronic copy of all course documents to the Student Office. The Student Office stores these course documents for the future use of Course Instructors and TAs. These materials should be submitted via Dropbox, Google Folder, or another file-sharing protocol. An email notification and electronic copy of the TA evaluation form will be sent to the TA, to the course instructor(s), and to the TA research advisor(s) to confirm that the graduate student has successfully completed the TA assignment. A copy of the form will also be kept in the graduate student's file in the Student Office for future reference.

TAs are expected to be available from September 1 to January 15 (Fall semester) or January 16 to May 31 (Spring semester). Some courses may require students to start a few weeks before the normal TA start date. In such cases their TA appointment will end early as well. A student working as a full TA is expected to devote an average of 20 hours per week to TA responsibilities. Some subjects with limited enrollment require only a fractional TA effort, and in those cases, partial TA appointments are made. The number of subject credit units for which a TA may enroll is limited to 36 credit units per semester, in addition to research seminars in the 10.9XX series. No academic credit is given for the TA appointment.

- **Practice School Stations**

Financial support is provided during the semester that students are engaged in project work at the Practice School stations.

- **Graduate Graders**

Graduate Graders assist in the teaching of many subjects. These positions are advertised to the graduate student body at the beginning of each semester. Students volunteer for these positions, and must be serving as a full-time RA or Fellow during the term of service as a grader. Graduate Graders are involved in grading homework assignments, copying material for class, and preparing project materials. Graduate Graders should not be responsible for any activity involving student contact. Graduate Graders are paid \$15/hour and can work no more than 10

hours per week. Grader positions are open to international students, as well as domestic students.

### **OFFICE SPACE, KEYS, AND CARD ACCESS**

First-year students will receive their office assignments and desk keys from the Student Office during the first few days of the fall semester. When a student chooses a research advisor, they move into a laboratory or office space associated with the advisor's research group. The student should contact the Research Advisor's Administrative Assistant to secure an office key.

When a student vacates their office, their desk and office space must be emptied. Any office or desk keys should be returned to the associated administrative assistant.

### **ROOM RESERVATIONS**

To make a room reservation in Buildings 66, E17 (5<sup>th</sup> floor), E18 (5<sup>th</sup> floor), and E19 (5<sup>th</sup> floor), a graduate student should request the assistance of the administrative assistant of their advisor. For reservations in Building 76, email Mariann Murray at [mariann@mit.edu](mailto:mariann@mit.edu).

### **DEPARTMENT COMPUTER SUPPORT**

The Chemical Engineering Computer Support Team, Jim Hardsog and Jean Belbin, can be contacted for any computing related issues including: computer viruses, email issues, network access, printing, software applications, toner cartridge replacements, web browser issues, ordering new software, and obtaining a new IP Address for a computer or printer. The computer support team is located in rooms 56-483 and 66-365 and can be reached by telephone at extension 3-0088 or by email at [cheme-computer@mit.edu](mailto:cheme-computer@mit.edu).

### **MACHINE SHOP FACILITIES**

A Central Machine Shop facility is available on a fee-for-service basis. Requests for shop services can be done either in person or from the webpage <http://web.mit.edu/cmshop>. Email can be sent directly to the Central Machine Shop at [cmshop@mit.edu](mailto:cmshop@mit.edu). Within the Chemical Engineering Department, Steve Wetzel (room 66-466, (617)258-7166, [swetzel@mit.edu](mailto:swetzel@mit.edu)) is also available for consultation on machine shop issues.



## **LABORATORY SAFETY**

Laboratory safety is of utmost importance. Specific information on safety-related policies and procedures is available from the Departmental Safety Committee, chaired by Department EHS Coordinator Brian Smith (room 66-471, (617)253-6238, bssmith@mit.edu). Another departmental resource person for safety-related matters and general issues regarding departmental space and facilities is Steve Wetzel (room 66-466, (617)258-7166, swetzel@mit.edu). Steve acts as EHS coordinator for the department when Brian Smith is away from MIT. Susan Leite (room N52-467, (617)253-5246, smleite@mit.edu), our Environment, Health, and Safety Office (EHS) lead contact, is another valuable resource for safety matters. Carolyn Stahl (room N52-461, (617)253-5564, csstahl@mit.edu) is a valuable resource at the EHS Office for biological safety issues. Ryan Toolin (room N52-468, (617) 258-3879, rtoolin@mit.edu) EHS Radiation protection Officer is a person to contact for questions on radiation and lasers. Comprehensive safety information is available on the web from the MIT EHS office (<http://ehs.mit.edu/site/>).

Policies and procedures that describe each person's responsibilities for safe laboratory practices are detailed in the Chemical Engineering Department's "Chemical Hygiene Plan" (<http://ehs.mit.edu/site/content/chemical-hygiene-program>). Although the research and other work activities conducted in the Department are diverse, three requirements apply in all cases:

1. We are all responsible for our own safety, as well as the safety of people who work with and for us.
2. The person running an experiment or utilizing the laboratory space at any given time is responsible for the safe conduct of the experiment, and safe utilization of the laboratory space.
3. A supervisor of someone running an experiment should be satisfied that the person performing the experiment is aware of and follows safe laboratory procedures.

Anyone planning to work in a laboratory must log into the EHS website (<http://ehs.mit.edu/site/training>) to take the Training Needs Assessment and complete the training required before starting work in a laboratory.

A one-hour presentation on safety-related matters will be delivered during the first session of the Departmental Student Seminar Series (10.991/10.992) each term. All graduate students, Postdocs,

and UROP students who work in Chemical Engineering laboratories that are covered by the Chemical Hygiene Plan are required to attend these presentations and sign the attendance sheet.

Eye protection is required when working in all Chemical Engineering laboratories at all times. For many laboratory experiments safety glasses with side shields are appropriate. If you require prescription eyewear and wish to obtain a free pair of prescription eyeglasses with side shields please contact Sandra Lopes in Headquarters (66-350), [slopes@mit.edu](mailto:slopes@mit.edu).

The MIT EHS policy mandates the use of lab coats in laboratory environments “at a minimum, a laboratory coat or equivalent protective clothing is required for work with hazardous chemicals, unsealed radioactive materials, and biological agents at BL2 or greater.” MIT is currently in the process of launching a campus-wide initiative to encourage researchers to practice regular lab coat usage. However, wearing a coat is only the first issue; the second is choosing the right coat. It is important to choose a coat with features that are appropriate for the type of experiments that are being conducted in lab. For example, pyrophoric chemical users may choose to purchase Nomex coats, organic solvent users may choose FR-treated-cotton coats, and biological materials users merely a cotton-poly blend will. There are several types of coats which are available to MIT via two preferred vendors: Cintas and North Star. Information about the types of coats, pricing and availability can be found at the following site: [https://vpf.mit.edu/site/sourcing\\_procurement/what\\_s\\_new/lab\\_coat\\_services](https://vpf.mit.edu/site/sourcing_procurement/what_s_new/lab_coat_services).

For general information about MIT’s lab coat policy and other commonly asked questions go to this site: <http://labcoats.mit.edu/>.

## **PROFICIENCY IN WRITING**

The ability to write clearly and succinctly is an essential skill for a successful career as an engineer. Every new Graduate Student is required to take the Graduate Writing Skills Examination (<http://cmsw.mit.edu/graduate-writing-exam/>) the summer before starting at MIT. The Examination consists of two essays of 750–1250 words based on online readings. You will have 72 hours to write the two essays and submit them online. Based on the examination results, recommendations for remedial work may be made by the MIT Writing Program.

Each Graduate Writing Exam is assessed by two readers as to the degree to which the analytical summaries revealed an understanding of the conventions of academic writing, including:

- Comprehensiveness: offering an appropriately objective overview of the material
- Synthesis: synthesizing the salient points of all five articles
- Organization: organizing information logically, coherently, and analytically
- Paraphrase Accuracy: paraphrasing authors' language concisely and accurately
- Citation: citing sources accurately and fully
- Style and Discourse: using clear, correct and engaging prose

A score between 30-100 is assigned to each essay based on the combined overall scores of the two readers. Students who scored an 80 or above on this exam showed sufficiently developed abilities in all of these areas, with higher scores, obviously, indicating better performance. For students who scored lower than an 80, the following offers general information about writing performance at each level:

**75:** Generally clear prose at a sentence level and accurate citation and paraphrase of sources. Exams at this level revealed weaknesses in focus and organization when working with complex scholarly sources; e.g., limitations in organizing material conceptually, synthesizing material from multiple sources, or highlighting the central information from the sources

**60:** Exams at this level revealed weaknesses in focus and organization; e.g., limitations in organizing material conceptually, synthesizing material from multiple sources, or highlighting the central information from the sources. In addition, these exams showed lack of clarity in syntax or word choice

**40 – 50:** Exams at this level revealed limited familiarity with the conventions of academic writing—limitations in organizing material conceptually and logically, presenting information clearly and objectively, and accurately representing the information in the articles. These exams also revealed a pattern of grammatical weakness.

**30:** However well written otherwise, exams at this level revealed significant weaknesses with

accurate paraphrase and citation of the sources.

Students are notified by the Student Office during the summer of their score. Students that receive a score of less than 80 on the exam are required to take 21W.794, “Graduate Technical Writing Workshop”, a remedial writing class during IAP.

Students with an undergraduate degree from MIT are not required to take the writing examination. For any inquiries about the MIT Writing Program, including the results of the writing examination, please contact Suzanne Maguire ([easterly@mit.edu](mailto:easterly@mit.edu)) in the Student Office.

### **SELECTION OF RESEARCH TOPIC/RESEARCH ADVISOR(S)**

First-year PhD/ScD, PhDCEP, and CSE PhD students take a seminar series (10.990) during the fall semester to inform the students about faculty research interests to aid them in selecting a research advisor. First-year MSCEP students are required to take 10.990, as well. Although PPSM students are not required to take 10.990, they are encouraged to attend those seminars that are of interest to them. First-year PhD/ScD, PhDCEP, and MSCEP students are required to attend **ALL** 10.990 faculty presentations. Attendance is recorded and monitored.

First-year doctoral students are also required to arrange meetings with at least six faculty members to discuss possible research topics. Those meetings are acknowledged by faculty signatures on the Advisor Selection Form provided by the Student Office (see page 48 and online <http://web.mit.edu/cheme/resources/gradstudents/index.html>). Students are encouraged to be persistent in arranging the meetings, and not to wait until the Fall semester is almost over to meet with faculty. Each student should select two research projects (1<sup>st</sup> and 2<sup>nd</sup> choices) by the end of the fall semester, and indicate their selection on the form provided by the Student Office. The Department Head will make every effort to grant each student their first choice, within funding and space limitations. Students will be notified of their research advisor(s) assignment by mid-January. The Department cannot guarantee that a research advisor will be found for every student. However, efforts will be made by the Department Head and the Graduate Committee Chair to assist any student who has difficulty identifying a research advisor.



For SM degree candidates, the selection of a research advisor may be made at any time with the joint agreement of the student and a faculty member. PPSM students should contact their program advisor for information on the research advisor selection process.

For CSE PhD students, the selection of the research advisor is the same as for PhD and PhDCEP students.

Occasionally, a research project does not proceed according to the expectations of the student, the research advisor(s), or both. Early recognition of the possibility of switching topics and/or research advisor(s) is an important factor in successfully managing this process. Any student contemplating a change of research advisor(s) should contact the Graduate Officer Richard D. Braatz and/or Academic Administrator Suzanne Maguire for consultation and assistance. If a change in research advisor(s) has been made, the student should notify the Student Office of this change in writing.

### **THE DOCTORAL PROGRAMS (PhD/ScD and PhDCEP)**

There are two distinct programs (PhD/ScD and PhDCEP) leading to the doctoral degree in the Chemical Engineering Department. The PhD/ScD program emphasizes the research experience while the PhDCEP program provides a blend of engineering science and business/management education along with a research experience. Although the same Qualifying Examination is used to screen students for doctoral candidacy in the two programs, transfer from one program to the other is not automatic and is strongly discouraged. In the rare event that an enrolled student wishes to enter a doctoral program different from the one to which they were originally admitted, the student must re-apply to the Chemical Engineering Graduate Admissions Committee. Applications to the PhDCEP Program are reviewed by both the Chemical Engineering Graduate Admissions Committee and the corresponding admissions body at the Sloan School of Management.

\*There is no difference between the PhD and the ScD degrees, except for the designation on the diploma and the color of the hood at Commencement (see page 29).

PhDCEP students are not allowed to serve as an RA, or to be funded via an RA, during their time at Sloan. While at Sloan, PhDCEP students may serve as a TA and be funded via a TAsip, however.

The key requirements leading to a doctoral degree in Chemical Engineering are discussed below.

### **Qualifying Examination**

The purpose of the Chemical Engineering Qualifying Examination is to assess whether the student possesses the necessary attributes to succeed at the doctoral level of study. These attributes include technical mastery of the several components of the chemical engineering discipline, the ability to integrate material across subject boundaries, and creative problem solving when confronted with unfamiliar problems. The qualifying examination at MIT consists of both written and oral components. Early in their program each doctoral candidate must pass the Written Qualifying Examination, which consists of a set of questions that cover core undergraduate and/or graduate chemical engineering material. This examination is given twice each year, in January and May. The exam is normally taken in January of the first year. In any event, the exam must be taken by the end of the third regular term of study (fall, spring) after admission to the doctoral program; exceptions to this policy due to extenuating circumstances must receive prior approval by the Graduate Officer. Requests to take the Written Qualifying Examination are made by completing a form available in the Student Office. For the 2015-2016 Academic Year, the key dates are:

- **November 30, 2015 (Request Form due to the Student Office for January exam).**
- **January 14, 2016 (Written Qualifying Examination).**
- **March 31, 2016 (Request Form due to the Student Office for May exam).**
- **May 19, 2016 (Written Qualifying Examination).**

The written exam consists of three open-book questions, focused primarily (but not exclusively) on thermodynamics, transport, and kinetics. Graduate material on thermodynamics and transport may be included on the January exam, at the level of the corresponding core subjects offered in the Fall term (10.40 and 10.50), and graduate material on kinetics may additionally be included on the May exam, at the level of the corresponding core subject offered in the Spring term (10.65). Otherwise, the material is typical of that covered in undergraduate programs in chemical engineering. The exam is generally 3 hours long; exceptions to this schedule are announced at least one week before the exam. The results of Written Qualifying Examination are evaluated by the faculty, along with the student's performance in MIT subjects and other academic records, to determine whether or not they are prepared to be a doctoral candidate, and a decision of Pass or Fail on the Written Qualifying Examination is made. If the performance on the Written Qualifying Examination per se is unsatisfactory, the student will be so

informed. Students who fail the Written Qualifying Examination may request to take it a second time, by petition to the Department Head. A student whose request is granted must retake the written exam at the next available offering; exceptions to this policy due to extenuating circumstances must receive prior approval by the Graduate Officer. In no case is a candidate allowed to retake the written exam more than once.

The Oral Qualifying Examination requirement is met by the satisfactory presentation of the thesis proposal at the first meeting of the candidate's Thesis Committee (*c.f.* Thesis Proposal). The candidate should be able to demonstrate familiarity with the relevant background, explain the motivation and specific aims of the project, and defend the proposed research plan; the student should also demonstrate professionalism in preparing and presenting the proposal. A typical thesis proposal presentation should be no more than 45 min, with an additional 45 min for discussion, questions, and deliberation of the Thesis Committee. If the performance is unsatisfactory in the judgment of the MIT faculty on the Thesis Committee, the student will be so informed. Students who fail the oral exam may request to revise and present the proposal a second time, by petition to the Department Head. A student whose request is granted must repeat the thesis proposal by the end of the next regular term (fall or spring); exceptions to this policy due to extenuating circumstances must receive prior approval by the Graduate Officer. In no case is a candidate allowed to retake the oral exam more than once.

For PPSM students, the Department allows the PPSM Qualifying Examination to be administered in lieu of the Chemical Engineering Qualifying Examination.

CSE PhD students take the Chemical Engineering Qualifying Examination.

Students who have passed the Qualifying Examination may petition to defer the start of their research and temporarily withdraw from MIT. All temporary leaves must be approved by the Department through the Graduate Officer and the Chairman of the Graduate Admissions Committee. When a petition is approved, a letter recognizing this approval, signed by the Chairman of the Graduate Admissions Committee, is given to the student. The letter states that the student will be readmitted to the Department, and will not be required to retake the Qualifying Examination, if they return to the Department within five years of passing the Qualifying Examination. A copy of this letter is kept in the graduate student file in the Student Office for future reference.

## **Thesis Committee**

As soon as practical, but no later than eleven months after choosing a research advisor(s), each doctoral student should select a Thesis Committee in consultation with their research advisor(s). The Thesis Committee must have two or more members in addition to the research advisor(s). At least two members of the Thesis Committee must be faculty members in Chemical Engineering. At least one committee member must be a Chemical Engineering faculty member who is not the research advisor. The research advisor will serve as the Thesis Committee Chairperson. For students in the PPSM program, the research advisor need not be a Chemical Engineering faculty member, but must be a PPSM faculty or affiliate. For students in the CSE PhD program, the Thesis Committee must contain a member of the Center for Computational Engineering (CCE) (see the list of faculty: <http://computationalengineering.mit.edu/about-cce/researchers/departments-chemical-engineering-faculty-and-researchers>).

The Thesis Committee is responsible for providing advice on the doctoral student's academic and research programs, and for monitoring the quality and the progress of the research carried out by the student. A Thesis Proposal is to be presented to the Thesis Committee by the doctoral student. Oral and written progress reports are to be presented at least once a year in the PhD/ScD program, and more frequently in the PhDCEP program (see section on Progress Reports on page 20). It is the responsibility of the student to ensure that meetings with the Thesis Committee are scheduled in a timely manner. It is also the responsibility of the student to reserve a room for the Thesis Committee meetings (see page 9). Reporting Forms for the Thesis Proposal Presentation as well as for the Thesis Committee Progress Reports are online, electronic forms ([cheme-forms.mit.edu](http://cheme-forms.mit.edu)).

The interaction of the doctoral student with their Thesis Committee is a very effective means for the student to obtain general advice and detailed technical consultation. The Thesis Committee members serve as a group of expert consultants in the research areas relevant to the student's doctoral thesis, and are chosen by the student, in consultation with the research advisor(s), to complement the background and expertise of the research advisor(s). Doctoral students are encouraged to have frequent one-on-one interactions with Thesis Committee members. In addition, doctoral students are encouraged to add new members to their Thesis Committee as needed during the course of their thesis project. When there is mutual agreement between the doctoral student and a Thesis Committee member that continued service



on the Thesis Committee is not warranted, a member of the Thesis Committee may be excused. However, the requirements on the composition of the Thesis Committee, as indicated above, must be satisfied at all times.

### **Thesis Proposal**

The Department requires doctoral students to submit a written Thesis Proposal within eleven months after they have passed the Written Qualifying Examination. The Thesis Proposal must be presented orally to the Thesis Committee within that same time frame. The purpose of the oral presentation is to obtain early feedback on the thesis project from the combined expertise and experience of the Thesis Committee members. Failure to complete the Thesis Proposal and the oral presentation within the aforementioned deadlines will constitute unsatisfactory progress toward the doctoral degree, and can result in denial of future registration. There is also a financial penalty for failure to complete the Thesis Proposal Requirement in a timely manner. The oral presentation of the thesis proposal also serves as the Oral Qualifying Examination (*c.f.* Qualifying Examination). Students who fail the oral exam may request to revise and present the proposal a second time, by petition to the Department Head. A student whose request is granted must repeat the thesis proposal by the end of the next regular term (fall or spring); exceptions to this policy due to extenuating circumstances must receive prior approval by the Graduate Officer. In no case is a candidate allowed to retake the oral exam more than once.

Scheduling of meetings with faculty can be a difficult problem at certain times during the academic year. It is strongly recommended that students do not leave the oral presentation of the Thesis Proposal to the very end of the 11-month period following the Written Qualifying Examination. It is the student's responsibility to schedule a room and any audio/visual equipment that they may need for their oral presentation (see page 9). Reserving the room and submitting the various Thesis Committee Reporting Forms are also the student's responsibility for all subsequent Thesis Committee Meetings following the Oral Presentation of the Thesis Proposal. Copies of the Thesis Proposal should be given to each member of the student's Thesis Committee at least one week before the oral Thesis Proposal presentation.

Although the format of each Thesis Proposal is a matter to be worked out between the student and their research advisor(s), the below outline may serve as a useful guide:

**1. Cover Page**

- Provides a title, name(s) of research advisor(s) and members of the Thesis Committee, and date of submission. The mailing addresses, email addresses, and telephone numbers of members of the Thesis Committee outside the Department should also be provided.

**2. Specific Aims**

- Clearly states the thesis objectives (not to exceed one page).

**3. Background**

- Presents a rationale for conducting the proposed research studies.
- Reviews briefly the previous research relevant to the proposed studies.

**4. Research Plan**

- Discusses the planned research with particular emphasis on expected difficulties and challenges.
- Presents preliminary results.
- Indicates how the proposed experimental and/or theoretical results will serve to meet the proposed objectives.

**5. Safety**

- Discusses any safety-related issues including personal and environmental safety, and waste-disposal procedures.

**6. Time Schedule**

- Delineates the expected time schedule.

**7. Literature Citations**

**8. Appendices (optional)**

- Expands the literature review if necessary or desired. Provides experimental details or more complete theoretical derivations, as appropriate.

Thesis Proposals, including literature citations, figures, and tables, should not exceed 25 pages, using at least an 11-point font and one-inch margins. The Thesis Proposal is a statement of the intended plans for the research program and is not meant to be a document containing a significant volume of research already completed by the student. At the completion of the meeting it is the responsibility of the student to submit an online Report of Thesis Proposal Presentation Form. Once submitted, this form is electronically sent to the Research Advisor(s) first, and Thesis Committee second, for approval.

### **Report of Regular Thesis Committee Meeting, Report of Plan-to-Finish Thesis Committee Meeting, and Report of Final Thesis Committee Meeting**

In the PhD/ScD program, Written and Oral Progress Reports should be presented to the Thesis Committee at least once every 12 months. The PhDCEP program requires one Thesis Committee Meeting each in the fall and spring semesters of the second and the third years of the program. These types of committee meetings should not be scheduled in December or in May, because of the large numbers of proposal presentations and final defenses that occur in those months. In addition, for both PhD/ScD and the PhDCEP programs, frequent one-on-one interactions with the student's Thesis Committee members are expected and encouraged.

For a Written Progress Report to be most useful, in addition to summarizing the progress made by the student since the last Thesis Committee Meeting, it should clearly state the problems and challenges encountered by the student in their research, including unsuccessful attempts made to resolve them and a discussion of future approaches to be pursued. The Written Progress Report should be as concise as possible. Students are also encouraged to append copies of the slides to be used during the oral presentation at the Thesis Committee Meeting. When appropriate, supporting data and completed manuscripts may also be appended to the Written Progress Report.

Written Progress Reports, including all appended materials, should be given to each Thesis Committee member at least one week prior to the Thesis Committee Meeting, to enable each Thesis Committee member to be better prepared for the meeting.

The Thesis Committee Meetings should not exceed 90 minutes, with about half devoted to the student's presentation and half to discussion. Following the Thesis Committee Meeting, in consultation with the research advisor(s), the student should prepare a detailed summary of the Thesis Committee's evaluation of their research to date, as well as indicate any real or potential problems identified. The student should submit the Written Progress Report online within one week following the Thesis Committee Meeting. The online form will then be sent electronically to the research advisor(s), and each Thesis Committee member for approval. The student, the research advisor(s), and other members of the Thesis Committee, will receive a copy of this form, including summary and meeting notes, for

future reference via email. An electronic copy of the form and supporting materials will also be kept in the graduate student's file in the Student Office for future reference.

In the PhD/ScD program, the Department requires at least one Thesis Committee Meeting in each 12-month period following the presentation of the Thesis Proposal, and more frequent meetings are encouraged whenever significant feedback from the Thesis Committee is required. An approximate timeline for completion of the doctoral program, showing the various thesis committee meetings, is presented on page 27.

### **Regular Thesis Committee Meeting**

The first thesis committee meeting following the Thesis Proposal Presentation, referred to as a Regular Thesis Committee Meeting, should be scheduled by the student within 12 months of the Thesis Proposal Presentation Meeting (see page 27). A second Regular Thesis Committee Meeting, to be held within 12 months of the first, may be needed before the Plan-to-Finish Thesis Committee meeting.

### **Plan-to-Finish Thesis Committee Meeting**

The Plan-to-Finish Thesis Committee Meeting should be scheduled by the student when completion of the research is anticipated within about 12 months (see page 27). At the Plan-to-Finish Thesis Committee Meeting, the Thesis Committee should evaluate a Written Plan-to-Finish Report prepared by the student. This report should be a concise summary reevaluating the research plan proposed by the student in the original Thesis Proposal, including discussing and justifying any needed modifications to the original research plan. The report should also discuss the remaining tasks (experiments, theoretical derivations, simulations, analysis, literature review, and writing) needed to bring the doctoral thesis project to a successful completion. A realistic time line for the completion of these tasks should also be included. The written Plan-to-Finish Report should not constrain the intellectual inquiry of students and research advisor(s). On the contrary, it is subject to revision if significant opportunities or setbacks arise in the course of the remaining thesis research. The Written Plan-to-Finish Report should be given to each Thesis Committee member at least 1 week prior to the meeting.

### **Final Thesis Committee Meeting**

Within 12 months of the Plan-to-Finish Thesis Committee Meeting, the student should schedule the Final Thesis Committee Meeting (see page 27). For this meeting, the student should prepare a Written



Final Progress Report, summarizing the main results obtained in the doctoral research, and justifying why these results are sufficient for completion of the doctoral thesis. This document should be given to each Thesis Committee member at least one week prior to the meeting. At the Final Thesis Committee Meeting, the Thesis Committee should agree that the work carried out by the student, as reflected in the Written Final Progress Report and in the student's Oral Presentation, constitutes a high-quality research study and is suitable for presentation to the faculty in the Final Thesis Defense (see page 23). In the semester during which the student plans to defend their thesis, they should only register for 10.THG.

For those students who have not had a Thesis Committee Meeting in 12 months, a Form recording the date of the last Thesis Committee Meeting (see page 49) will be emailed to them. The Form will indicate that the student should have a Thesis Committee Meeting within three months following Registration Day. The Form will also indicate that failure to comply with this requirement will constitute Unsatisfactory Progress toward the doctoral degree, and may result in denial of future Registration. The Form should be signed by the student and by the research advisor(s) to indicate that this important requirement is clearly understood. The completed form should then be submitted to the Graduate Officer for approval as part of the Registration Process. The Form, approved by the Graduate Officer, will be kept in the graduate student file in the Student Office for future reference.

In the PhDCEP program, the Thesis Committee evaluates the merits of the research on an ongoing basis, similar to the PhD/ScD program. In addition, there is special significance to the PhDCEP Plan-to-Finish Meeting, which is held prior to the end of the Fall semester of year 3 of the program. Based on the written Plan-to-Finish Report and the discussions at the Plan-to-Finish Meeting, one of four outcomes is possible:

- (a) Progress is satisfactory, and the student is on track for successful completion of the research project prior to the end of the third calendar year.
- (b) The research progress of the student is satisfactory, and the scope of the project is well suited for completion in the foreseeable future, but not by the end of the third calendar year.
- (c) The student's progress is satisfactory, but the scope of the research project is not well suited for completion in a clearly defined time frame. The larger scope of the research subject relative to that originally envisioned makes it more suitable for the PhD/ScD program that has no specific time limit on the research phase.

- (d) The research progress is unsatisfactory, and its successful completion by the student is not expected on any time scale.

Outcome (a) is most likely. In Outcome (b), the Thesis Committee and the research advisor(s) are empowered to recommend to the Chemical Engineering Department Graduate Officer a time extension of up to one year; approval is expected under normal circumstances. Outcome (c) requires decisions on the part of the student. If the student wishes to enter the PhD/ScD program in the Chemical Engineering Department, a formal application to the Department's Graduate Admissions Committee will be required. This application would normally be submitted by the end of IAP of the academic year in progress. Endorsement of the student's research work and a petition by the research advisor(s) and the Thesis Committee will be essential in such cases. The Department anticipates that outcome (d) will be a rare event. Students viewed by the Thesis Committee as making unsatisfactory progress with no likely improvement will be denied further registration and will leave MIT with the MSCEP degree.

### **Final Thesis Defense**

Following the satisfactory completion of the Final Thesis Committee Meeting, doctoral students can begin the Thesis Defense process. The best source of information about this process is the "Thesis Packet for Doctoral Candidates", which is located online on the Departmental website at <http://web.mit.edu/cheme/resources/gradstudents/index.html>. This packet describes in detail the procedures for preparing for a Thesis Defense and submitting a Doctoral Thesis (the procedures for preparing and submitting a Master Thesis are the same). In addition, at the beginning of each term the Student Office holds an information session about the thesis defense process, for students who are approaching their defense. Information about this session is listed on the [Departmental calendar](#).

The sequence of steps for the Doctoral Thesis Defense are:

1. **Beginning of the Term: Application for Advanced Degree** – An Application for Advanced Degree must be filled out online via WebSIS (<http://student.mit.edu/>) by the date indicated on the MIT Academic Calendar (<http://web.mit.edu/registrar/calendar/>), depending on which term (Fall, Spring, IAP, or Summer) the student plans to defend.
2. **At Least Four Weeks Prior to Defense: Thesis Defense Scheduling Form Approval** – The [Thesis Defense Scheduling Form](#) is used to communicate approval to the Student Office and inform the Student Office of the proposed date and time of the defense. The student

should work with their thesis committee members to find and secure a suitable date and time for their thesis defense, where as many members of the thesis committee are present. The normal expectation is that all Thesis Committee Members will be present at the defense, and every effort should be made to choose a date that makes this possible. Although the date should be arrived at via committee consensus, this form only requires the approval of the research advisor(s).

3. **Four Weeks Prior to Defense: Submit Thesis Review Form** – Promptly after the Thesis Defense Scheduling Form has been approved, and four weeks prior to defense, the student must submit the electronic, online [Thesis Review Form](#) to their entire committee. This is the last and most necessary approval required to defend on the proposed date. If the committee does not submit their approval via this form, then the student must reschedule their thesis defense date. Upon submission, this form will be sent to the research advisor(s) and every thesis committee member. The thesis committee members will have two weeks to review, comment upon, and possibly suggest changes to the thesis document.
4. **After Date is Approved: Reserve a Room** – As soon as the date and time are confirmed via the Thesis Defense Scheduling Form, the student should reserve a room (see page 9).
5. **Two Weeks Prior to Defense: Thesis Review Form Approval Due** – Exactly two weeks prior to the defense date, approval of the thesis and approval to defend are required from each committee member, via the Thesis Review Form. It is the responsibility of the student to monitor the progress of this form and remind their committee members of the deadline of this form, to ensure its timely submission.
6. **Two Weeks Prior to Defense: Technical Summary Due** – The student should email a PDF of their “technical summary” to the Student Office. The technical summary is a text-only document no longer than two pages (12 point font, 1 inch margins, single-spaced) that should describe the scope and the significance of the entire doctoral thesis. The primary audience is the Chemical Engineering Department faculty, who will be interested in a concise description of the thesis research and its most significant findings. Upon receipt of the technical summary, the Student Office will distribute it to the entire faculty in the department via an email announcement designed to generate faculty attendance at the Final Thesis Defense. All thesis committee members are expected to be present.
7. **Within Two Weeks of Defense: Secure Faculty Presider** – The thesis defense must be presided over by a faculty member who is a member of the Chemical Engineering Department

but not the/a research advisor to the student. The majority of the time this falls to the ChemE, non-advisor faculty member who is a member of the thesis committee. It is the responsibility of the student, with the help of the research advisor if needed, to secure a presider for the defense in advance of the thesis defense, to ensure this requirement is met. The student must email the name of the presider to the Student Office.

8. **Day of the Defense: The Thesis Defense** – The student should plan to speak for no more than 30-40 minutes. The thesis presider (from the MIT Chemical Engineering faculty) will introduce the research advisor(s), who subsequently will introduce the candidate. The thesis presider will also be in charge of the open and closed question-and-answer sessions which follow the candidate's presentation, culminating in the final deliberations by the faculty. The thesis presentation and first question-and-answer session are open to the public, but will be followed by a second session involving only the candidate, Thesis Committee Members, and other MIT faculty.
9. **Two Days After the Defense: Turn in Forms to Student Office** – Once the thesis defense is successfully completed, the student has two days to assemble the final version of the thesis document. The student should turn in to the Student Office two final copies of the thesis, and at least two title pages (on archival bond paper) signed by the research advisor(s). The final version must be printed on archival bond paper. The Final Thesis will then be distributed\* to the MIT Archives and the Engineering Library.

\*In the case of PhDCEP candidates, the final thesis will not be distributed for approval and signature until the end of the final year of the program, so that the 10.IPG Integrative Complete Project Paper can be included as a capstone chapter in the thesis document.

The student will also need to hand in the following documentation to the Student Office (found within the [Thesis Packet for Doctoral Candidates](#), located on the departmental website at: <http://web.mit.edu/cheme/resources/gradstudents/index.html>):

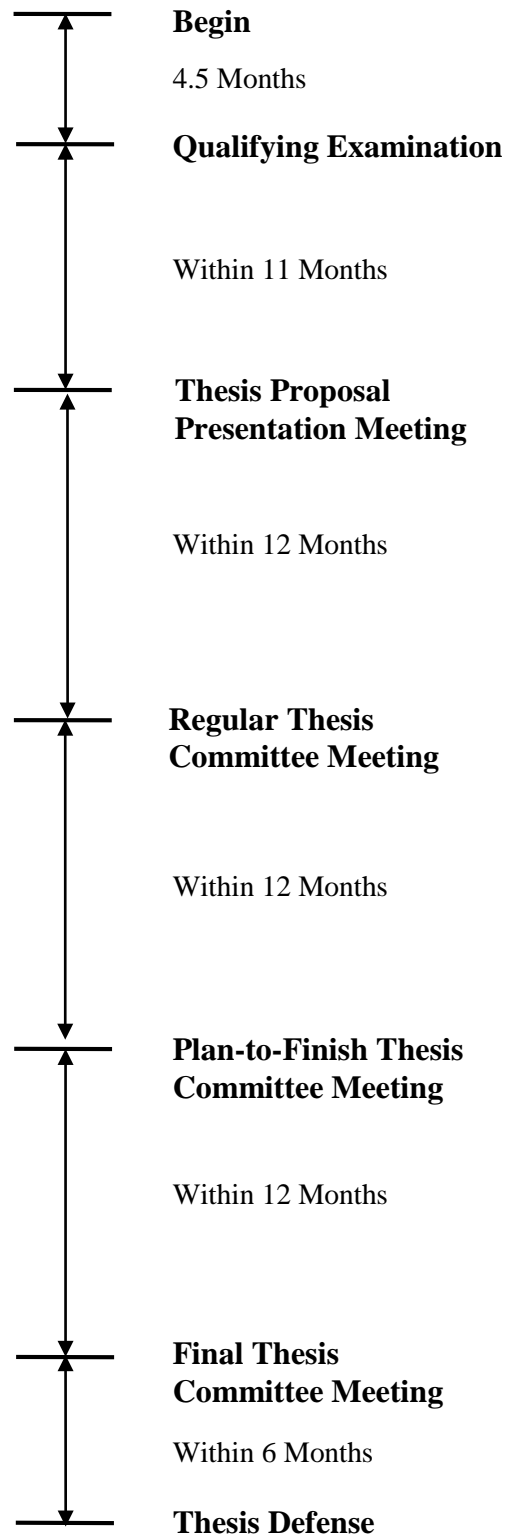
- University Microfilms Form (UMI)
- One extra copy of the Thesis Title Page
- One extra copy of the Thesis Abstract
- Chemical Engineering Department Departure Form
- Forwarding Address and Recruiting Questionnaire (electronic form)

### **Scheduling of Thesis Defense**

The official deadlines that apply to Chemical Engineering students in the PhD/ScD program for each of the three Institute-wide degree lists compiled during the year are set by the Registrar's Office, and are published in the Institute calendar each year <http://web.mit.edu/registrar/www/calendar.html>. In certain cases, the Student Office may be able to grant extensions beyond these official dates, but such extensions cannot be guaranteed. Students who miss the official Institute deadlines may be required to register for the next term in order to defend their thesis. Some tuition costs may be incurred as a result.

For students in the PhDCEP program whose Sloan School component will begin in the fall, the complete research component of the thesis must be turned in to the Student Office and distributed to all the thesis committee members by August 15. The two-week reading period, therefore, must be completed by September 1, and the student and the Thesis Committee members must schedule the date of the thesis defense before September 15. The Sloan School component of the PhDCEP program will begin that semester, concurrent with the Thesis Defense in Chemical Engineering.

## Proposed Timeline for Completion of Doctoral Program



## **Biology Requirement**

Each doctoral student is required to take at least one subject on the molecular and cellular basis of biological systems, which can be satisfied by one of two options: (a) taking MIT's introductory undergraduate biology course (7.012/7.013/7.014), or (b) petitioning to satisfy the requirement by virtue of having already taken an equivalent course(s) at their undergraduate institution prior to admission to MIT. If a student follows option (b), they should provide detailed written information about the relationship of the material covered in the course(s) that they have taken and the material covered in 7.01X <http://web.mit.edu/7.01x/>. The syllabi of the courses and a copy of the undergraduate transcript should be included as documentation.

Students should request the Graduate Officer's approval to satisfy the Biology Requirement as soon as possible after completing the Qualifying Examination. Students can request this approval by completing the [Biology Requirement Form](#) online.

A grade of "B-" or higher must be received in any course listed to satisfy the Biology Requirement.

## **Minor Requirement**

The Departmental Minor Requirement broadens the education of doctoral students by exposing them to modes of thought or problem solving in another field. For those in the traditional PhD/ScD program, this is done via concentrated study of some other discipline or body of knowledge outside Chemical Engineering, consisting of at least three subjects and 24 total credit units. The Minor field may be technical (e.g., polymers, energy systems, biomaterials, applied physics, applied mathematics, computational science and engineering) or non-technical (e.g., energy policy, management), but must have a coherent theme. The subjects should pass at least one of the three tests of coherence: (1) they are offered by the same department; (2) although perhaps not in the same department, they are part of a conceivable major; (3) research in all three subjects could be published in the same specialty journal. Criterion (2) applies most to disciplines that span multiple departments, such as biology, chemistry, and mathematics. Subjects with 10.xxx numbers cannot be used to fulfill the minor requirement except in rare cases and only if approved by the Graduate Officer. A 10.xxxsubject that may be approved as part of a minor would have little or no involvement of Chemical Engineering faculty or have little chemical engineering content. How advanced a subject needs to be to fulfill the minor requirement depends on how close the minor is to Chemical Engineering. To avoid misunderstandings, students



should seek approval of their Minor Program before taking any of the proposed subjects; the [Proposal for Doctoral Minor Form](#) is an online form. Questions about proposed minors may be directed to the Graduate Officer, and approved minors can be revised at any time, subject to the approval of the Graduate Officer.

The sequence of subjects in the Sloan School taken by PhDCEP students satisfies the Departmental Minor Requirement, and no formal petition for approval is required. The five graduate-level subjects in computational science and engineering required of the CSE PhD program satisfies the Departmental Minor Requirement, and no formal petition for approval is required. Students in the PPSM program must take three subjects in Chemical Engineering, in addition to those that are part of the PPSM core curriculum, in order to satisfy the Minor Requirement. Two of these three subjects must be from the Chemical Engineering Core Curriculum (10.34, 10.40, 10.50, and 10.65).

A grade of “B-” or higher must be received in every subject taken to satisfy the Minor Requirement.

### **Teaching Requirement**

It is the Department’s policy that every doctoral student is required to serve as a Teaching Assistant (TA) for one term. Two possible semesters of availability for the TA draft are identified by the student at the time of the Thesis Proposal Presentation Meeting, by completing the appropriate section in the online [Report of Thesis Proposal Presentation Meeting Form](#). The student must complete this section of the form. Students should complete their TA service to the Department by the end of their fourth year.

### **Doctoral Degrees**

Students in the PhDCEP program receive a PhD degree. Other doctoral students are given the choice of receiving a Doctor of Philosophy (PhD) degree or a Doctor of Science (ScD) degree. There is no difference between the PhD and the ScD degrees except for the designation on the diploma and the color of the hood at Commencement. The lining of the hood carries the school’s colors – red and gray. The velvet edging on the hood is blue for a Doctor of Philosophy (PhD) and gold for a Doctor of Science (ScD).

### **Doctoral Student Seminar (PhD/ScD and PhDCEP Programs)**

Two subjects (10.991–fall semester and 10.992–spring semester) have been designated as doctoral student seminars. All students in the PhD/ScD and the PhDCEP programs must register for these subjects after their first fall semester at MIT. Students planning to defend their thesis in a specific semester should not register for 10.991 or 10.992 in that semester. The doctoral seminars are held on Monday afternoons from 3:00 to 4:00/4:30 p.m. (in room 66-110). Typically, on a given Monday afternoon, two third-year doctoral students will present on their research. All doctoral students are also expected to regularly attend the Friday afternoon Departmental seminars (3:00 to 4:00 p.m. in room 66-110) delivered by visitors to the Department. Both sets of seminars provide an excellent opportunity for students to broaden their perspective in many areas of Chemical Engineering research.

The purpose of the third year talk is manifold. For the attending students, it provides an opportunity to (1) keep aware of the scope of active research in the department, (2) practice critically evaluating and giving constructive feedback to speakers via the evaluation forms, and (3) gain confidence asking questions in a public, but supportive, forum. As such, attendees are strongly encouraged to listen carefully, give useful feedback, and participate during the question and answer session. The feedback will be provided to the speaker anonymously. It will not be shared with the faculty, nor will it influence the speaker's satisfactory completion of the requirement, so attendees are encouraged to be honest and forthcoming. For the presenter, it provides an opportunity to prepare and deliver a more general talk than a typical group meeting or even conference talk; each attending student should be able to follow the content of the talk and learn from it. Thus, the goal of the seminar is not to impress the audience with the magnitude of the presenter's results, but instead to focus on creating a clear, concise message with a unifying theme and sufficient context and motivation.

Attendance is taken at the Monday seminars (via online seminar evaluation forms). Attendance is based on the number of individual presentations attended. For example, if at a Monday seminar there are two presentations, then a student who attended both presentations, and filled out and submitted two evaluation forms, would receive credit for two attendances. Attendance credit will not be given for a student's own presentation, or for the mandatory safety seminar. Doctoral students who do not attend at least 50% of the total seminar presentations will receive an "F". PPST

students are exempt from 10.991/10.992. For PPST students, 10.960 satisfies the seminar requirement in the Fall and Spring semesters. CSE PhD students are required to attend and complete the mandatory 50% attendance.

The Department Head is in charge of the 10.991/10.992 doctoral seminars, with the seminar scheduling done by the Student Office. All doctoral students are required to give a Departmental seminar. Students should plan to give their doctoral seminar two years after they pass the Qualifying Examination. Students who attend the Practice School will be given extra time to prepare for their seminar. PhDCEP seminar speakers should plan to give their presentation in the spring term of their third year at MIT. At that time, they should be close to completing the research phase of the PhDCEP program, and therefore the seminar will be a good way for the PhDCEP students to demonstrate the achievement of at least one publishable paper from their period of research in the department.

Seminar speakers must prepare a summary of their talk one week prior to the seminar. A copy of this summary (1 to 2 pages), should be emailed (in PDF format) to the Student Office one week before the presentation. The Student Office will email the summaries to everyone in the department prior to the Monday seminar. Seminar speakers should plan to speak for no more than 20 minutes to allow sufficient time (10 minutes) for questions.

### **Nonresident Doctoral Thesis Registration - Institute Regulations**

Nonresident status is intended for doctoral students who have completed all requirements other than the thesis. Thesis research is ordinarily carried out while the student is in residence at the Institute. However, on some occasions, it may be essential or desirable that the student be absent from the campus during a portion of his or her thesis research or writing. Permission to become a nonresident doctoral candidate must be obtained from the Dean for Graduate Education (Christine Ortiz, room 3-133, (617)253-1957) at least one month prior to Registration Day of the term during which the student wishes to register in this category (a fee will be assessed for late requests).

A student who is permitted to undertake nonresident thesis research must register as a nonresident doctoral candidate and pay a substantially reduced tuition. For the first three regular academic

terms, tuition is approximately 5% of regular full tuition. Thereafter, it is charged at approximately 15%. The Schedule of Fees sets forth the specific tuition charges.

Nonresident students have limited access to the facilities and academic life of the Institute. However, they are permitted access to the libraries and athletic facilities and have the same student health privileges and options as resident students upon payment of the appropriate fees. For the first three semesters of nonresident status, a student may receive fellowship support from MIT for an amount up to 5% of tuition per semester. After the third semester, nonresident students can no longer receive fellowship support from MIT. Eligibility for federal loans and sponsored billing remain unaffected for the length of nonresident tenure.

Prior to submission, the request form must be approved by the student's thesis supervisor and by the departmental Graduate Officer from the student's department of registration. Justification for the nonresident status must be set forth in the proposal. This may include field work or data collection, use of special or unique facilities at other laboratories, the need to accompany a thesis supervisor who transfers to another institution prior to completion of thesis research, and simultaneous employment unrelated to the Institute and also unrelated to the thesis research. Arrangements must be described through which the thesis research will be supervised by a member of the faculty or a senior staff member approved by the department.

Prior to seeking approval, the student must have completed the general qualifying examinations and must have been in residence as a regular graduate student for a period of at least four regular terms (periods of residence at other educational institutions, as a special student or during the summer session at MIT may not be counted in meeting this requirement). The student must also have submitted a thesis proposal that indicates approval by the supervisor and the appropriate departmental committee. A summary of the proposal must be included with the request for nonresident status submitted to the Dean for Graduate Education.

Nonresident doctoral candidates are not eligible to reside in student housing or to be graduate resident tutors. Upon approval for nonresident status, students must terminate their current license agreements (with adherence to current policies) and forfeit their continuing housing status, if

applicable. Students granted this status may subsequently request to be put on a waiting list and, when space is available, may be assigned housing on a semester-by-semester basis.

Should space become available after all other fully registered students have requested and have been granted an assignment on campus, Housing will then offer the nonresident candidate an available space. Students on the waiting list will be offered a space in the order of date applied. Housing will try to allow students already in graduate housing who move to nonresident status and who receive an offer from the waiting list to stay in their current location, but this is not guaranteed.

Students cannot accept employment as academic, administrative, or research staff, or as hourly employees at MIT, Lincoln Laboratory, or the Charles Stark Draper Laboratory while registered as nonresident graduate students. Initial approval for nonresident status is granted for two successive regular terms in the same academic year. Registration as a nonresident doctoral candidate is not required during the summer session unless the student is returning to resident status to complete degree requirements and submit a thesis. Continuation for two additional periods of two regular terms each may be granted by the Dean for Graduate Education if the student's progress is satisfactory and if the thesis supervisor and the department so recommend. Generally, a maximum of six regular terms in nonresident status will be permitted. Longer periods will need written endorsement from the department of registration. Following completion of the nonresident period, the student must return to resident status for completion and presentation of the doctoral thesis. If the thesis is completed during the first term of resident status (including summer session), tuition will be prorated on a weekly basis subject to a minimum charge of one half the tuition for a regular term.

Registration must be continuous. If a student is withdrawn and then readmitted to resident status to submit a thesis and receive the doctoral degree that same term, tuition will be 1.5 times the full tuition for a regular term.

Special action by the Dean for Graduate Education is not required for thesis research in the cooperative, internship, and practice school programs in several departments of the School of Engineering. The tuition charges for these programs are set forth in the Schedule of Fees.

### **Tuition Charges for Doctoral Theses (2015–2016)**

Tuition charges for continuing resident student registration will be in accordance with the regular tuition and minimum fee schedule as indicated in the MIT Catalogue or on the website <http://web.mit.edu/registrar/reg/costs/graduate/thesisrules.html>.

If a student defends their doctoral thesis before the last day of classes, the tuition will be prorated according to the Registrar's Tuition Table to the day of the oral thesis defense. Students should consult the MIT Academic Calendar for the various deadlines for doctoral theses submission <http://web.mit.edu/registrar/www/calendar.html>.

### **PROGRAM IN POLYMERS AND SOFT MATTER (PPSM)**

This section is intended to summarize the expectations of the Department of Chemical Engineering for students in PPSM who intend to receive a PhD/ScD degree in Chemical Engineering. Except where noted, such students are expected to adhere to the policies and procedures described in this Handbook. Questions should be directed to the Student Office (room 66-366, (617)253-4577), or to the PPSM Office <http://polymerscience.mit.edu> (room 76-253, (617)253-0949). The following guidelines apply:

1. The PPSM core curriculum replaces the four core subjects (10.34, 10.40, 10.50, and 10.65) and the Biology Requirement of the Department of Chemical Engineering.
2. Students in PPSM must take three subjects in Chemical Engineering, in addition to those that are part of the PPSM core curriculum, in order to satisfy the Minor Requirement. Two of these three subjects must be from the Chemical Engineering core curriculum (10.34, 10.40, 10.50, or 10.65). A grade of "B-" or higher must be received in every course taken to satisfy the Minor requirement.
3. 10.960 satisfies the seminar requirement each Fall and Spring semesters for PPSM students. During their first Fall semester at MIT, PPSM students are strongly encouraged to attend 10.990 seminars delivered by PPSM faculty and affiliates.
4. First-year students are required to meet with at least five faculty or affiliates of PPSM to discuss possible research topics. Each faculty should sign a form provided by the PPSM office. The selection of a research advisor(s) should be made in consultation with the PPSM Director

Darrell J. Irvine (room 76-261C, (617) 452-4174, [djirvine@mit.edu](mailto:djirvine@mit.edu)), typically by the end of the first Fall semester.

5. The Thesis Committee should consist of two or more members, in addition to the research advisor. At least two of these must be faculty members in Chemical Engineering. The research advisor serves as the Thesis Committee Chairperson. The research advisor need not be a faculty member in Chemical Engineering, but in this case, a pro-forma ChemE co-research advisor is required.
6. PPSM students admitted by the Department of Chemical Engineering are required to serve as a Teaching Assistants (TA) for one term in the Department, normally in a 10-XXX subject. Two possible semesters of availability for the TA draft are identified by the student at the time of the Thesis Proposal Presentation Meeting, by completing the appropriate section in the [Report of Thesis Proposal Presentation Meeting Form](#). Both the student and the research advisor(s) must sign this section of the Form.
7. The Qualifying Examination administered by the PPSM faculty replaces the Chemical Engineering Qualifying Examination. The PPSM Qualifying Examination is offered once a year, at the end of the spring semester. Requests to take the PPSM Qualifying Examination should be made in writing to the PPSM Director by April 15. The written portion of the PPSM Qualifying Examination consists of five or six one-hour questions split into two sessions, with a break in between. The oral portion of the PPSM Qualifying Examination involves responding to two or three questions posed by the PPSM faculty in a single 45-minute session. The PPSM Qualifying Examination covers material presented in the first two semesters of the PPSM core curriculum, as well as general knowledge of an introductory nature in the area of polymer science and engineering.

### **COMPUTATIONAL SCIENCE AND ENGINEERING (CSE) PhD PROGRAM**

This section is intended to summarize the expectations of the Department of Chemical Engineering for students in the CSE PhD program who intend to receive a PhD/ScD degree in Chemical Engineering. Except where noted, such students are expected to adhere to the policies and procedures described in this Handbook. Questions should be directed to the Student Office (room 66-366, (617)253-4577), or to Kate Nelson in the CSE Office [kpnelson@mit.edu](mailto:kpnelson@mit.edu) (room 35-329, (617)253-3725). The following guidelines apply:

8. CSE PhD students must complete the Chemical Engineering core curriculum (10.34, 10.40, 10.50, and 10.65), the Chemical Engineering Biology Requirement, and one additional graduate level subject in Course 10 (see page 3).
9. CSE PhD students must complete five graduate subjects from the Center for Computational Engineering (CCE) approved list of computational science and engineering subjects (<http://cce.mit.edu/cse>), which is called the “Major Field of Study” by CCE. These classes also satisfy the Chemical Engineering Minor Requirement. A grade of “B-” or higher must be received in every course taken to satisfy the Minor requirement.
10. During their first fall semester at MIT, CSE PhD students are required to attend 10.990 seminars.
11. Beginning in their first spring semester at MIT, CSE PhD students are required to attend 10.991/10.992 seminars.
12. First-year CSE PhD students are required to meet with at least five faculty to discuss advisor selection and possible research topics. Each faculty should sign a form provided by the ChemE Student Office (see page 48).
13. The Thesis Committee should consist of two or more members, in addition to the research advisor. At least one of these must be a faculty member in Chemical Engineering. Additionally, at least one committee member must be a contributing CCE faculty member. The research advisor serves as the Thesis Committee Chairperson.
14. PPSM students admitted by the Department of Chemical Engineering are required to serve as a Teaching Assistant (TA) for one term in the Department, normally in a 10-XXX subject. Two possible semesters of availability for the TA draft are identified by the student at the time of the Thesis Proposal Presentation Meeting, by completing the appropriate section in the [Report of Thesis Proposal Presentation Meeting Form](#). Both the student and the research advisor(s) must sign this section of the Form.
15. CSE PhD Students take the Chemical Engineering Qualifying Examination (see page 15).



## **MASTER'S DEGREE IN CHEMICAL ENGINEERING PRACTICE (MSCEP)**

The Chemical Engineering Department at MIT offers a unique graduate program that combines coursework with problem solving in an industrial setting. Students normally spend two semesters (not necessarily consecutively) in the Chemical Engineering Department at MIT to satisfy subject requirements, and one semester at two industrial field stations engaged in project work which is accepted in lieu of an SM thesis. Students pursuing the Practice School option are generally divided into three categories: (1) Master's-only candidates, (2) doctoral candidates, and (3) MIT SB graduates pursuing a Master of Science in Chemical Engineering Practice (MSCEP). Over the past decade, about 60% of the departmental doctoral students have selected the Practice School program as an interim degree en route to their PhD/ScD.

Matriculated graduate students in the Department can apply to the School of Chemical Engineering Practice by completing a Practice School application and arranging an interview with the Practice School Director T. Alan Hatton after entering the Department. Typically, students entering in the fall semester complete their application by December 1 for placement in the following summer, fall, and spring sessions. Practice School applications can be completed on-line <http://web.mit.edu/cheme/academics/practice/form.html>.

## **Requirements for a Master's Degree in Chemical Engineering Practice (MSCEP)**

The Practice School station assignments are offered 3 times per year, during the fall, spring, and summer terms, and the distribution of subject and project requirements depends on the semester of attendance at the Practice School Station. Those students attending either the fall or the spring sessions complete four 12-unit projects, while students attending the stations during the shorter summer session (13-week program vs. 16-week program) complete only three projects, and make up the remaining credit units by doing additional coursework. Each Practice School project is rated as two 0-6-0 subjects, grades being given independently for technical performance and for non-technical aspects of the project execution. Proficiency in certain core areas of Chemical Engineering is required for the MSCEP degree. All students are required to take one subject in each of the following areas:

<b>Required Subjects</b>	<b>Suggested Courses</b>	<b>Units</b>
Thermodynamics	10.40	12
Heat and Mass Transfer	10.50	12
Reaction Engineering	10.65	12
Systems Engineering	10.551	9
Numerical Methods	10.34	9
Introduction to Chemical Engineering Research	10.990	6
Applied Process Chemistry	10.25, 10.391J, 10.392J, 10.541, 10.542, 10.544, 10.569, 10.585, 10.586, 10.625J, 10.626, 10.652J, 10.571, 10.572, 10.817J (others are also allowed with consent of the Practice School Director)	9 or more
Undergraduate Process Design	Course from Undergraduate Institution, OR 10.390, 10.490, 10.491 at MIT	No units credited toward MSCEP Degree
	<b>Total Course Units Required</b>	<b>69 or more</b>

For students attending in the fall and spring semesters, additional credit requirements include:

Practice School Projects	10.80 through 10.87	48
	<b>Total Units for MSCEP Degree</b>	<b>117 or more</b>

For summer session students, the credit requirements include:

<b>Elective</b>	<b>Consent of Practice School Director</b>	<b>9 or more</b>
Practice School Projects	10.80 through 10.85	36
	<b>Total Units for MSCEP Degree</b>	<b>114 or more</b>

Graduate-level subjects taken outside the Department may be accepted in lieu of the above subject requirements with the consent of the instructor teaching the appropriate subject, and of the Practice School Director. In such cases, credit unit requirements must be satisfied with other graduate-level technical subjects approved by the Practice School Director.

### **ARRANGEMENTS WHILE AT PRACTICE SCHOOL**

Financial support for students enrolled in the Practice School program is available. Funding from a group of Sponsoring Companies and from a Practice School Alumni/ae Endowment Fund is used to support students while in residence at MIT, normally limited to one semester of support for each student. In addition, Practice School students may be supported by teaching assistantships, research assistantships, or external fellowships. Students at the stations receive funding with full tuition and with stipends equivalent to what would be granted at MIT, with funding from the host companies, the Practice School Endowment, or external fellowships.

Housing is provided by the host company for single and married students during the period of assignment to the Practice School Station sites.

### **MASTER'S DEGREE WITH THESIS**

The general requirements described in the MIT Graduate School Manual are applicable <http://odg.mit.edu/gpp/degrees/masters/master-of-science/>. Students must complete at least 66 subject units. The four core graduate subjects (10.34, 10.40, 10.50, and 10.65, see page 3) are required for the SM degree. Units that have been used to satisfy other master's program degree requirements (e.g., MSCEP, see page 35) cannot be used to satisfy the 66 units required for the SM degree. 24 units of thesis should be taken, and this is in addition to the 66 units just mentioned. Thesis units in excess of 24 may not be used to satisfy subject requirements. The SM Thesis must be approved by two readers, the research advisor, and one additional Chemical Engineering faculty member.

### **JOINT MASTER'S DEGREES**

This degree is intended for graduate students who seek academic recognition in two professional fields, which, although distinct, have a substantial interdisciplinary connection.

For the Chemical Engineering portion, the student must satisfy the same subject requirements as for any SM degree offered by the Department. A total of at least 132 subject units in both Departments is an Institute requirement <http://odg.mit.edu/gpp/degrees/masters/simultaneous-registration-for-two-masters-degrees/>. This total does not include the required thesis units. If the student is attending Practice School, units in excess of 36 may be used to satisfy the Chemical Engineering subject requirements.

A joint SM program cannot be declared near graduation. As described in the MIT Graduate School Manual:

Participation in a dual degree program is limited to students who are already registered in one Department and who meet the admissions criteria in the second Department. At least two regular terms prior to completion of the program, the student must submit to each Department a statement of educational objectives along with a detailed program plan that includes a description of the proposed thesis topic. The total program must meet with the approval of each Department and a petition approved by the Dean of the Graduate School describing the program must be filed with the Registrar. The thesis research shall be done under the supervision of an approved member of one of the two participating Departments with the other Department providing a thesis reader. The research must be done on campus. The thesis must be of superior quality. The single thesis cannot be used to satisfy the requirements of any additional graduate degree programs.

If the Practice School is to be used to meet the thesis requirement, this choice must be approved by the other participating Department.

### **SPECIAL GRADUATE STUDENTS**

A Special Graduate Student in Chemical Engineering is one whose intended program of study is essentially graduate in nature, but who is not a candidate for a degree. Application for this status is made to the Departmental Admissions Committee. Admission is valid only for one term; readmission must be sought each term. Other information relating to filing dates, fees, and academic performance can be found in the MIT Graduate School Manual, at the Office of the Dean for Graduate Education website: <http://odg.mit.edu/gpp/registration/status/special-student/>.

### **CONSULTATION OR OUTSIDE JOBS**

The financial aid provided to the Department for fellowships, research, or teaching assistantships usually carries a restriction that the student should devote full-time effort to the activities for which

they is receiving support. Students receiving support from the Department must therefore consult with their research advisor(s) and ask the Chemical Engineering Graduate Officer before undertaking any compensated outside activity, and obtain an approval form from the Dean for Graduate Education, Christine Ortiz (room 3-138, (617)253-4860, [cortiz@mit.edu](mailto:cortiz@mit.edu)).

### **UNSATISFACTORY PROGRESS**

Students judged to be making unsatisfactory progress toward their degree objective will be so notified in writing by the research advisor(s), the Graduate Officer, or the Dean for Graduate Education, Christine Ortiz (room 3-138, (617)253-4860, [cortiz@mit.edu](mailto:cortiz@mit.edu)). If sufficient improvement is not made by the end of the following semester, future registration may be denied.

### **COMPLETION OF STUDIES**

Each student, upon completion of their graduate program, must submit the following two forms:

1. Forwarding Address and Recruiting Questionnaire (Online)
2. Chemical Engineering Department Departure Form
  - This form requires various approvals, including those of the student's research advisor(s) and either the Facilities Manager, Steve Wetzel (room 66-466, (617)258-7166, [swetzel@mit.edu](mailto:swetzel@mit.edu)), or the Dept. EHS Coordinator, Brian Smith (room 66-471, (617)253-6238, [bssmith@mit.edu](mailto:bssmith@mit.edu)) to ensure that the laboratory and/or office space is neat and clean, and that no unapproved chemical samples are left behind. In addition, all office, desk, and lab keys must be returned to the Administrative Assistant associated with the student's research advisor), prior to leaving the Institute.

In addition, each student submitting a thesis for the master's or doctoral degree must turn in the following materials to the Student Office:

1. Two copies of the thesis (on archival bond paper)
2. One extra copy of the Thesis Abstract
3. One extra copy of the Title page
4. University Microfilms Form ([UMI](#))

The thesis must be signed by the student, and their research advisor(s), prior to being submitted to the Student Office. The title pages and one copy of the thesis will then be delivered by the Student Office to the Graduate Officer for final approval and signature. The two copies of the doctoral thesis, along with all other forms, must be turned in to the Student Office within two days following the Final Thesis Defense. The master's thesis (with the accompanying forms) must be turned in to the Student Office on or before the last day of classes.

## **GENERAL MIT POLICIES**

### **Affirmative Action/Equal Opportunity in Education**

The Massachusetts Institute of Technology is committed to the principle of equal opportunity in education and employment. The Institute does not discriminate against individuals on the basis of race, color, sex, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, ancestry, or national or ethnic origin in the administration of its educational policies, admissions policies, employment policies, scholarship and loan programs, and other Institute administered programs and activities, but may favor U.S. citizens or residents in admissions and financial aid.

The Vice President for Human Resources is designated as the Institute's Equal Opportunity Officer and Title IX Coordinator. Inquiries concerning the Institute's policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to Alison Alden, Vice President for Human Resources, Room E19-215, 617-253-6512, or to the Manager of Staff Diversity and Inclusion, Room E19-215, 617-452-4516. Inquiries about the laws and about compliance may also be directed to the Assistant Secretary for Civil Rights, US Department of Education.

\*The ROTC programs at MIT are operated under Department of Defense (DOD) policies and regulations, and do not comply fully with MIT's policy of nondiscrimination with regard to sexual orientation. MIT continues to advocate for a change in DOD policies and regulations concerning sexual orientation, and will replace scholarships of students who lose ROTC financial aid because of these DOD policies and regulations.

### **MIT Policy on Harassment**

Harassment of any kind is not acceptable behavior at MIT; it is inconsistent with the commitment to excellence that characterizes MIT's activities. MIT is committed to creating an environment in which

every individual can work, study, and live without being harassed. Harassment may therefore lead to sanctions up to and including termination of employment or student status.

Harassment is any conduct, verbal or physical, on or off campus, that has the intent or effect of unreasonably interfering with an individual or group's educational or work performance at MIT or that creates an intimidating, hostile, or offensive educational, work, or living environment. Some kinds of harassment are prohibited by civil laws or by MIT policies on conflict of interest and nondiscrimination.

Harassment on the basis of race, color, sex, disability, religion, national origin, sexual orientation, gender identity, veteran's status, or age includes harassment of an individual in terms of a stereotyped group characteristic, or because of that person's identification with a particular group.

Sexual harassment may take many forms. Sexual assault and requests for sexual favors that affect educational or employment decisions constitute sexual harassment. However, sexual harassment may also consist of unwanted physical contact, requests for sexual favors, visual displays of degrading sexual images, sexually suggestive conduct, or offensive remarks of a sexual nature.

The Institute is committed under this policy to stopping harassment and associated retaliatory behavior. All MIT supervisors have a responsibility to act to stop harassment in the areas under their supervision.

Any member of the MIT community who feels harassed is encouraged to seek assistance and resolution of the complaint. MIT provides a variety of avenues by which an individual who feels harassed may proceed, so that each person may choose an avenue appropriate to his or her particular situation. Institute procedures are intended to protect the rights of both complainant and respondent, to protect privacy, and to prevent supervisory reprisal.

General complaint procedures are described in Section 9.6 Complaint and Grievance Procedures as well as the Guidelines for Raising Complaints about Harassment.

## **Complaint and Grievance Procedures for Students at MIT**

Students who believe they have been treated improperly, for any reason, are encouraged to raise their concerns. Students who have difficulty in their living groups should raise these problems within the living group and with graduate residents and housemasters, as appropriate. Concerns related to the broader Institute community, including but not confined to academic or work situations, should be raised directly with professors, instructors, departmental advisors and immediate supervisors, Campus Police or other Institute officials, as appropriate to the nature of these problems.

In the Department of Chemical Engineering, students may wish to contact one of the following people to discuss issues of harassment, complaints, or other concerns:

- Prof. Paula T. Hammond, Department Head, Room 66-350, (617)258-7577, [Hammond@mit.edu](mailto:Hammond@mit.edu)
- Prof. Richard D. Braatz, Graduate Committee Chair, Room E19-551, (617)253-3112, [braatz@mit.edu](mailto:braatz@mit.edu)
- Suzanne Maguire, Academic Administrator, Room 66-366, (617)253-4577, [easterly@mit.edu](mailto:easterly@mit.edu)
- Esther Estwick, Personnel Administrator, Room 8-331, (617)253-4563, [estherg@mit.edu](mailto:estherg@mit.edu)

A concern may also be raised at any time with any of the following MIT personnel:

- Mary Rowe, Special Assistant to the President and Ombudsperson, Room 10-213, (617)253-5921, [mrowe@mit.edu](mailto:mrowe@mit.edu)
- Toni Robinson, Ombudsperson, Room 10-213, (617)253-5921, [trobins@mit.edu](mailto:trobins@mit.edu)
- Alison Alden, Vice President for Human Resources, Room E19-215, (617)253-6512, [aalden@mit.edu](mailto:aalden@mit.edu)

If the complaint is against another student and cannot be resolved otherwise, the Office of the Dean for Student Life may assist (Room 4-110, (617)253-4052), or the case may be referred to the Committee on Discipline. For further information on the Committee on Discipline, please refer to the MIT Bulletin. (Detailed procedures of the Committee on Discipline are stated in [Committee on Discipline Rules and Regulations](#), which is available from the Office of the Dean for Student Life (<http://web.mit.edu/committees/cod/>.)



The Institute's policy is that individuals will not be reprimanded, or discriminated against, for initiating an inquiry or a complaint. The Institute's policy is to recognize and respect the rights of any individual against whom a complaint has been brought.

The above procedures are intended to resolve issues within the Institute, and follow the guidelines explained in the MIT Policies and Procedures Guide (Updated 8.5.2015) <http://web.mit.edu/policies/>. The procedures are not ordinarily available to deal with the substance of a complaint that has been formally taken outside the Institute.

Normally, while a complaint is being pursued internally, a complainant is expected to represent himself or herself directly; individuals are free to obtain the support and assistance of a co-worker or fellow student or any other MIT associate in presenting their concerns. "MIT associate" is a person who is currently a member of the MIT community, mainly a student, faculty member, staff member, or other employee, but not a member of the complainant's immediate family (parent, sibling, spouse, or child) so that issues of familial loyalty do not cloud the resolution of the complaint.

Once a complaint is presented or an inquiry has begun, a determined effort should be made at each step, either to resolve the problem, or to refer it to the next step, within one week. Throughout the entire complaint process, the complainant should be assured that the information provided will be kept confidential, insofar as the individual wishes it, or until such time as the individual agrees that a third party, or parties, must be informed to facilitate action. This assurance of confidentiality may be qualified: for example, by the duty placed by law on persons receiving complaints of particular types.

### **Academic Honesty**

MIT assumes that all students come to the Institute for a serious purpose and expect them to be responsible individuals who demand of themselves high standards of honesty and personal conduct. Cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty are considered serious offenses for which disciplinary penalties can be imposed.

Some academic offenses by students may be handled directly between a faculty member and the student, possibly with the assistance of the Department Head. More information on academic honesty

can be found on the MIT website at <http://web.mit.edu/policies/10.0.html> or at <http://web.mit.edu/academicintegrity/>.

# **IMPORTANT DEPARTMENTAL FORMS**

Most departmental forms are now electronic forms, and may be found at:  
<https://cheme-forms.mit.edu>

## ADVISOR SELECTION FORM 2015 CHEMICAL ENGINEERING DEPARTMENT

**Directions:** All PhD / ScD / PhDCEP students should submit this form to the Student Office (66-366) by **Wednesday, December 9, 2015**. This form will not be accepted without all of the required Faculty Signatures.

**STUDENT NAME:** \_\_\_\_\_

### I. RECORD OF MEETINGS WITH POTENTIAL RESEARCH ADVISORS

As part of the Research Advisor selection process, I have discussed possible research projects with the following six Chemical Engineering faculty:

<u>Faculty Name (Please Print)</u>	<u>Date</u>	<u>Faculty Signature</u>
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

### II. ADVISOR & PROJECT SELECTION

#### 1. FIRST CHOICE

Advisor Name: \_\_\_\_\_

Project Title: \_\_\_\_\_

Advisor Agreement: I hereby agree that if the student named above is assigned to me as one of the two doctoral students allowed by the Department, I will accept him/her as a doctoral student in my research group (**Advisor Signature, on or after December 2, 2015**) \_\_\_\_\_.

#### 2. SECOND CHOICE

Advisor Name: \_\_\_\_\_

Project Title: \_\_\_\_\_

# ***RECORD OF THESIS COMMITTEE MEETINGS***

***September, 2015***

Name **Jones, Rocky**

As a Departmental rule, every graduate student in the PhD program should have a Thesis Committee Meeting at least once every 12 months following the Thesis Proposal Presentation (for additional information about Thesis Committee Meetings, please consult the 2015-2016 Chemical Engineering Graduate Student Handbook).

Your Student Office record indicates (see below) that you have not had a Thesis Committee Meeting during the last 12 months. In view of that, you should schedule a meeting within the next 3 months. Failure to do so will constitute Unsatisfactory Progress toward the doctoral degree, and may result in denial of future registration.

On Registration Day, please submit this form, signed by you and by your research advisor(s), to the Graduate Officer. This is your acknowledgment that you need to convene your thesis committee soon (within the next 3 months).

## **Research Advisor(s)**

J. Willard Gibbs

## **Thesis Information**

Title

Thesis Proposal Completed

### **Committee Dates**

### **Thesis Committee Members**

**Student  
Signature** \_\_\_\_\_

**Research  
Advisor(s)** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ENGINEERING DEPARTMENTAL**  
**MSCEP STUDENT DEPARTURE FORM**

Name: \_\_\_\_\_

Office Number: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Email: \_\_\_\_\_

Date of Graduation: \_\_\_\_\_

1. Office space has been returned to satisfactory condition:

- a) Desk drawers and shelves are completely emptied: \_\_\_\_\_
- b) Desk top, drawers, and shelves have been cleaned of any food residues, dust, and other detritus: \_\_\_\_\_
- c) Desk drawers are left unlocked: \_\_\_\_\_
- d) Any needed repairs have been reported: \_\_\_\_\_

\_\_\_\_\_  
Confirmed and signed by: Stephen Wetzel (66-371, swetzel@mit.edu, 8-7166) or  
Brian Smith (66-471, bssmith@mit.edu, 3-6238)

2. All office and desk keys and material borrowed from the Chemical Engineering Dept.  
have been returned to the Executive Officer Assistant in 66-350.

Yes \_\_\_\_\_ No \_\_\_\_\_ \*

\_\_\_\_\_  
Confirmed and signed by Executive Officer Assistant (66-350)

<p>*Keys are not being returned at this time because student is staying in the department for _____ months as _____ (on voucher payroll) working with Prof. _____.</p>
--

**CHEMICAL ENGINEERING DEPARTMENTAL**  
**PHD/SCD/PHDCEP/MS STUDENT DEPARTURE FORM**

NAME: \_\_\_\_\_

ROOM NUMBER: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_

1. Office and/or laboratory space is in satisfactory condition. All chemicals are under my care.

\_\_\_\_\_ Research Advisor(s)

2. Final Date of Support by Research Advisor: \_\_\_\_\_

Research Advisor's Initials: \_\_\_\_\_

3. Laboratory space is in satisfactory condition:

- a) All chemicals (whether the bottles are opened or unopened), all wastes, and all samples must either be removed from your laboratory and properly disposed of, or someone else (your advisor, another student, or lab mate) must sign this form indicating that he/she accepts all chemicals, wastes and samples left in your laboratory.
- b) Boxes, junk, etc. have been discarded.
- c) Laboratory is orderly and clean

\_\_\_\_\_  
Steven Wetzel (66-371, 8-7166, or swetzel@mit.edu)  
or Brian Smith (66-471, 3-6238, or bssmith@mit.edu)

4. All keys and materials borrowed from the Chemical Engineering Department have been returned. Yes \_\_\_\_ No \_\_\_\_ \*

\_\_\_\_\_  
**Group Administrative Assistant**

5. Returned Credit Card: \_\_\_\_\_

**Group Administrative Assistant**

**\*Keys are not being returned at this time because student is staying in the department for \_\_\_\_ months as \_\_\_\_\_ (postdoc or on voucher payroll) working with Prof. \_\_\_\_\_.**