

## Rules and Regulations governing Ph.D. Studies

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This document is intended to guide both graduate students pursuing or wanting to pursue a Ph.D. at the Department of Civil, Architectural and Environmental Engineering through the requirements concerning courses, credits, qualifying and candidacy exams. It also addresses issues like maintaining enrollment status and maximum allowable stay to finish the studies and obtain the sought degree.

### **1. GENERAL INFORMATION**

The Department of Civil, Architectural and Environmental Engineering offers a Ph.D. degree in Civil Engineering or Environmental Engineering. The Ph.D. programs in the department offer students the opportunity to develop a fundamental and in depth understanding of the principles that govern their field. Students are encouraged to be innovative and imaginative in their quest for recognizing, stating, analyzing, and solving engineering problems.

The goal of the Ph.D. program is to develop the abilities to discover, pursue, and apply the knowledge to their specific field of study. The Ph.D. degree is awarded for original research on a significant civil or environmental engineering problem. The research work is carried out under close supervision of a graduate advisor typically in her or his field of specialization. In many cases the research work may be part of an externally funded research project. For an overview of the ongoing research and research opportunities the reader is encouraged to visit the departmental web-site at [www.cae.drexel.edu](http://www.cae.drexel.edu). Additional information concerning graduate studies can be found at the college web-site at [www.drexel.edu/coe/graduate](http://www.drexel.edu/coe/graduate).

### **2. GENERAL REQUIREMENTS**

The department has a number of general requirements governing the Ph.D. curriculum that are ubiquitous to other departments in the college of engineering or across the university. These requirements are listed here for completeness. Some, however, are department specific and vary slightly from other departments in the college of engineering.

#### **2.1 Admission Requirements**

##### **2.1.1 *Academic Scores***

###### **2.1.1.1 *Post Masters***

An applicant for the Ph.D. program posting a MS degree must have a minimum **GPA of 3.25**, based on graduate coursework, to be accepted to the program. Under rare circumstances will the graduate committee of the department consider applications that post a GPA below 3.25. In this case the graduate committee will stipulate additional requirements, i.e. the applicants can be admitted with a provisional accept but must remove this status within a specified time frame (typically 3 or 4 terms) demonstrating exceptional academic performance. GPAs obtained from universities overseas will be adjusted to reflect different grading systems.

###### **2.1.1.2 *Post-Baccalaureate***

An applicant for the Ph.D. program posting a BS degree must have a minimum **GPA of 3.25** to be accepted to the program. While applicants having a MS degree are preferred, applicants seeking a post-

baccalaureate Ph.D. will be given consideration if there is a clearly stated desire to pursue the Ph.D. and view the MS as only a transitional degree. Under some circumstances will, the graduate committee of the department will consider applications that post a GPA below 3.25 but whom have strong GRE (and for non US students TOEFEL) scores. In this case the graduate committee may stipulate additional requirements, i.e. the applicants can be admitted with a provisional accept but must remove this status within a specified time frame (typically 3 or 4 terms) demonstrating exceptional academic performance. GPAs obtained from universities overseas will be adjusted to reflect different grading systems.

### **2.1.2 Test Scores**

All applicants must provide a copy of their latest awarded degree in addition to a complete set of transcripts. The department also requires all students to provide the **GRE** tests scores, except for applicants that have obtained their MS degree at Drexel University and are planning to continue to the Ph.D. There are no clearly defined minimum over all scores or minimum individual scores. However, combined scores below 1800 (or a combined 1100 for verbal and quantitative + 4.0 analytical writing) will in general be viewed as a concern. Additionally, foreign students are required to take the **TOEFL** test (or equivalent) and to provide the test scores with their application. The department follows a college wide policy to require a **minimum score of 600 (or 250 scaled + 4.0 in essay writing)**, even though exemptions are possible.

### **2.1.3 Background Degrees**

Applicants holding a BS or MS engineering degree in disciplines other than in civil, architectural or environmental engineering are encouraged to apply to the program but ought to be aware that admission may be subjected to additional course requirements to make up for the lack of basic civil or environmental course work. The level and extent of this extra course work will be determined when the applicant decides to join the program and depends on her/his degree as well as his/her chosen field of study. An applicant with an engineering or science degree may expect up to 10 additional courses as a makeup requirement if the background degree permits this. Admissibility of students with degrees other than in engineering or science will generally require more preparatory coursework, which will be determined on a case by case basis.

## **2.2 Residency Requirements and Timelines**

### **2.2.1 Residency and In Absentia Status**

Full time residency of at least one academic year (three consecutive full-time terms) is required for the doctoral degree. The residency is to ensure the student the opportunities for intellectual association with other scholars in an environment free from any distractions or other responsibilities.

Ph.D. candidates (for candidacy status see below) who have completed all course work and residency requirements and will not be using campus facilities, but occasionally may consult with their supervising professor, may request *in absentia* status. Such requests must be approved by the supervising professor and graduate advisor of the department, with final approval granted by the Graduate Studies Office. Doctoral candidates in absentia must register for at least 2 credits each term they are in this status. A doctoral candidate may not be considered in absentia during the term in which they defend their dissertation.

### **2.2.2 Timelines and Active/Inactive Status**

University policy provides that students who enter graduate study at the post-baccalaureate level must complete their studies for their graduate degree(s) **within 7 years** after initial graduate registration. Those who enter at the post-master level are permitted **5 years** after initial registration to complete the Ph.D. degree. Exceptions to these rules can be granted by the department (and Graduate Studies Office) but only under extenuating circumstances.

Graduate students are considered “active” for the terms in which they are registered. They are considered “inactive” when not registered for any term. The summer term is exempted from this rule for post-baccalaureate and post-master classifications, except Ph.D. candidates. Ph.D. candidates must remain in “active” status each term until graduation. When considering “inactive” status the students must be aware of the fact that the time-to-completion clock continues to run when in “inactive” status.

### **2.3 Additional Rules for Foreign Students**

#### ***2.3.1 Fulltime Status***

Foreign students must maintain full-time status at all times and cannot go into “inactive” status at any time. Fulltime status means a minimum of 9 credits/per term with no TA/RA appointment, i.e students who are self-funded; a minimum of 6 credits/term with a 0.5 combined TA/RA appointment, or a minimum of 3 credits with a full TA/RA appointment. This rule applies irrespective of whether the student is a pre-candidate or a Ph.D. candidate.

#### ***2.3.2 Registration***

Based on changes imposed by the Department of Home Land Security effective January 1, 2003, all foreign student and scholar visa holders must register with the International Student and Scholar Office (ISSO) at Drexel University to prove full-time status by filling out the Full-Time Certification for F-1 (J-1) Students form. This form must be filled out and presented to the ISSO each new term.

## **3. SPECIFIC REQUIREMENTS**

### **3.1 Courses/Credit and Advisor Requirements**

#### ***3.1.1 Credit Requirement***

The Doctor of Philosophy degree represents a high level of scholarly achievement both in the class room and in independent study and research. In order to fulfill the expectations for academic achievement the student is required to accumulate 90 credits. While the MS degree is not necessarily a prerequisite (see above), it may count for 45 credits towards the 90 credit requirement. The 45 credits of post-masters work usually consist of a combination of course requirements and research/dissertation work.

#### ***3.1.2 Supervising Professor Appointment***

It is a doctoral student’s responsibility to arrange association with a supervising professor with like research and scholarly interests, who is tenure or tenure-track, and with whom they will be able to work together. Because the appointment of a supervising professor is so vital to a student’s success, the appointment of this individual should be made after much consideration and forethought. Typically, however, the professor providing funding for the student is going to become her or his advisor. Only on rare occasions this may not be the case. The student is required to fill out, receive all necessary signatures and submit form D-2 to the Graduate Student Office.

### **3.2 Candidacy Exam**

The purpose of the candidacy exam is to determine the student’s ability and achievement at this point, particularly with regard to her or his understanding of the fundamental concepts and ideas pertinent to the field of endeavor. It comprises the first exam in a series of three that accompany the Ph.D. curriculum until its completion.

The Candidacy Exam consists of two parts: written exam and oral exam. The details of the two-part exam will be described in Section 3.2.3.

### **3.2.1 *Timeline***

For the students entering the program at the post-baccalaureate level, the candidacy exam must be taken at the time of completion of the MS degree (after 45 credits), and, for full-time PhD students, no later than 2 years after entering the program. If the student entered the program already holding a MS degree, the exam must be taken at the time of completion of 15 credits and no later than 1 year after entering the program. Students holding a MS degree from the College of Engineering at Drexel University and continuing his/her studies are also subjected to the rules described in this paragraph. (Exception for students with backgrounds other than civil and environmental engineering). For part-time PhD students these timelines will be relaxed the extent of which is subject to approval of the department's Graduate Advisor.

Furthermore, in order to be eligible for the candidacy exam, the student posting a MS degree must have taken at least 9 credits of course work at Drexel University (the other 6 can be research credits). Students must have a cumulative GPA of at least 3.25 to be eligible to take the qualifying exam. Students with a GPA less than 3.5 must obtain permission from the Graduate Advisor to register for the Candidacy Exam. Students must file Form D-3 with the Graduate Committee of the department for approval at least **4 weeks** prior to taking the exam.

### **3.2.2 *Committee Composition***

#### **3.2.2.1 *Written Exam Committee***

The committee should consist of three members selected from the pool of faculty in field of research interest of the student and the pool of faculty who taught the courses taken by the student during the preceding terms.

#### **3.2.2.2 *Oral Exam Committee***

The committee should be formed by the student and his/her advisor and must abide by the following University wide rules.

- 1) The committee must consist of at least five members, at least three of which must be currently tenured or tenure-track Drexel faculty members.
- 2) At least two of the committee members must be from outside of the student's major area.
- 3) At least one of the committee members must be from outside the student's department either a different department or entirely outside Drexel.

### **3.2.3 *Format***

#### **3.2.3.1 *Written Exam***

The exam will be given twice a year during fall and spring terms (given in weeks 3-5 of the term). A series of questions/problems will be given by the three written exam committee members. The length of the exam will be approximately 8-hour. The written exam, while fixed in duration, may be comprised of a number of different problem-solving assignments. Additionally, the exam may be closed book or open book or combination thereof. The student needs to consult with her/his advisor to become acquainted with the specific rules of each specialty group in the department. Hence, a plan of study for the first year should be compiled to ensure adequate coverage of the specialty group requirements.

#### **3.2.3.2 *Oral Exam***

At the end of the written exam, the student's advisor will assign a small research task to the student, who will work on it over a period of 3 to 4 weeks. The student prepares a presentation (approximately 30

minutes in length) in weeks 7-9 of the term, summarizing the student's findings and provides the oral exam committee members to further question the student.

The results of the written and the oral exam will be compiled and a decision rendered whether the student is permitted to continue in the Ph.D. program. If deemed appropriate by the program faculty, the exam may be attempted twice.

Students must fill out forms D-4 and D-4a (Member Report Form) and submit them to the Ph.D. Advisor prior to the exams. The Ph.D advisor should obtain the necessary signatures on these forms to be filed with the Graduate Studies Office within 48 hours of the examination with copies for the Graduate Advisor's and the Ph.D. Advisor's files.

### **3.3 Thesis Proposal Exam**

The purpose of the thesis proposal exam is to give the student the opportunity to present her/his research idea to the thesis proposal exam committee members in order to receive feedback and suggestions that can aid the development of the research work to completion.

#### **3.3.1 *Timeline***

The exam should be taken after the student has passed the candidacy exam, but preferably no later than 1.5 years (6 terms) after the candidacy exam. This is to ensure that the student remains on track and focused on her/his goal to obtain the Ph.D. degree. The student must file form D-5 (Thesis Advisory Committee Appointment) at least 4 weeks prior to the scheduled date of the examination.

#### **3.3.2 *Committee Composition***

The composition of the five-member Thesis-Proposal committee should be based on the same policy as the one stated for the formation of the oral exam Candidacy Committee (Section 3.2.2.2). The committee is formed by the student and her/his advisor and must abide by the following university wide rules:

- 1) The committee must consist of at least five members, at least three of which must be currently tenured or tenure-track Drexel faculty members
- 2) At least two of the committee members must be from outside of the student's major area.
- 3) At least one of the committee members must be from outside the student's department either a different department or entirely outside Drexel.

#### **3.3.3 *Format***

Prior to the thesis proposal exam, the student is required to write a Ph.D. research proposal that should outline the scope of the research she/he is conducting and plans to bring to completion. This proposal should be distributed among the committee members ahead of time (preferably two weeks before the exam), so they have the chance to go over it in detail.

The exam itself consists of a presentation (30-40 minutes in length), during which the student should present a summary of her/his proposal. The ensuing discussion can then direct the student to focus on certain ideas or important topics, develop alternative strategies to tackle the proposed work, or suggest additional areas that need to be covered.

The student should fill out forms TP-1 and TP-1(a) (Member Report Form) to the Ph.D. advisor prior to the exam. The Ph.D. advisor should obtain the necessary signatures on these forms to be filed with the Graduate Advisor within 48 hours of the examination with copies for the Ph.D. advisor's files.

## **4. GRADUATION REQUIREMENTS**

### **4.1 Thesis Advisory Committee**

After successfully completing the candidacy exam the student should file with the Graduate Studies Office her/his selection of the Thesis Advisory Committee. This committee can be different from the candidacy exam committee but commonly the composition is the same. The student needs to fill out form D-5 (Thesis Advisory Committee Appointment Request), obtain all the necessary signatures, and submit this form to the Graduate Studies Office.

The advisory committee is comprised as follows:

- 1) The committee must consist of at least five members, at least three of which must be currently tenured or tenure-track Drexel faculty members
- 2) At least one of the committee members must be from outside the student's department either a different department or outside Drexel University

### **4.2 Thesis Requirements**

Beyond the completion of 90 credits and the successful work on a research topic, the candidate must write a thesis that summarizes his goals and objectives, the tools and approaches he/she used to solve the research problem, as well as the results and a discussion of these. The thesis must follow a university wide accepted format and before being accepted must be "format"-reviewed by university library representatives.

### **4.3 Thesis Defense**

For the defense the student is required to form the Final Oral Examination Committee. This committee is commonly identical to the Thesis Advisory Committee, but does not have to. The student must fill out form D-6 (Final Oral Examination Appointment and Schedule), obtain all the necessary signatures, and submit this form to the Graduate Studies Office at least 4 weeks prior to the scheduled date of the examination.

After the defense, the candidate is required to file form D-7 (Report of the Ph.D. Final Oral Examination Committee) within 48 hours of the exam with the Graduate Studies Office.

## Required Forms for Ph.D. Program

Form	Name	Timeline	Submitted to Office
D-1	Plan of Study	Fourth week of the second quarter after joining the program	Graduate Advisor
D-2	Appointment of Supervising Professors	End of first year after joining the program; but no later than the end of second year	Graduate Advisor
D-3	Appointment of Candidacy Exam Committee	4 weeks prior to the exam date	Graduate Studies Office
D-4 and D-4(a)	Report on Candidacy Examination	Within 48 hours after the examination	Graduate Studies Office
D-5	Appointment of Thesis Advisor Committee	4 week prior to the Thesis Proposal Exam	Graduate Studies Office
TP-1 and TP1(a)	Report on Thesis Proposal Examination	Within 48 hours after the examination	Graduate Advisor
D-6	Appointment of Defense Committee	4 week prior to the to the exam date	Graduate Studies Office
D-7	Report of Defense Examination	Within 48 hours after the examination	Graduate Studies Office

## Requirement Summary for the Ph.D. Program

Exam	Student Status	Timeline	Committee	Form
Candidacy	Post-Baccalaureate	Completed 45 credits and 2 year after entering the program	Written exam: 3 members	D-3 D-4
	Post-Master	Completed 15 credits and one year after entering the program	Oral exam: 5 members	D-4(a)
Thesis Proposal	Candidate	6-terms and 1.5 years after the candidacy exam	Oral exam: 5-members	D-5 TP-1 TP-1(a)
Defense	Candidate	Post-Baccalaureate: within 7-years after entering the program Post-Master: within 5 years after entering the program	Oral Defense and Thesis exam: 5-members	D-6 D-7