PHILOSOPHY DOCTOR IN INDUSTRIAL ENGINEERING (Ph.D. IE)

DEGREE REQUIREMENTS

- 90+ total credit hours beyond baccalaureate degree (60+ total credit hours beyond masters degree)
- 60+ hours (30+ hours beyond masters degree) of formal coursework\(^1\), 20+ of which must at 6000 level
- 8+ hours of mathematics/statistics graduate coursework
- 20+ dissertation research hours\(^2\)
- Passing of the comprehensive exam, candidacy exam, proposal defense, and final dissertation defense
- A minimum of two (at least one accepted, the other submitted) refereed journal publications before graduation
- A minimum GPA of 3.0/4.0 must be maintained

**Core courses (12 credit hours)**

- ESI 6491 Linear Programming & Network Optimization
- ESI 6213 Stochastic Decision Models I
- ESI 6247 Statistical Design Models
- EIN 6935 Systems Modeling & Performance Analysis

PH.D. COMPREHENSIVE EXAM

**Purpose:** The purpose of the comprehensive exam (CE) is to reinforce student’s knowledge of the fundamental principles, approaches, and techniques of industrial engineering before (s)he can conduct independent research.

**Time/Duration:** Ph.D. students should take the CE after completing their core course requirements, preferably at the end of their second semester but no later than their fourth semester. The CE is administered once a year during the first half of May. The exam is administered between 9:00 am and 5:00 pm on the exam day.

**Content:** The CE covers the following core subjects: Linear Programming & Network Optimization, Stochastic Decision Models I, Statistical Design Models, and Systems Modeling & Performance Analysis.

**Registration:** No later than by the end of March, the graduate director sends an email to all doctoral students, which contains the date of the exam, registration deadline, and registration form. Each student must submit his/her registration form to the IMSE’s academic program specialist (Ms. Gloria Latter) with a copy to the graduate director by the specified deadline. The graduate director sends a request to each instructor and asks for CE questions to be sent to the graduate director no later than one week before the exam date.

**Procedure**

- All subject exams are open books, open notes. The use of internet is not permitted.
- Please plan to arrive prior to 9:00 am; it is recommended that you bring lunch
- You may bring: food, drinks, calculator, paper, pens, books, class notes
- You may not bring: computers, cell phones. You may give the department number 813-974-2269 to anyone who would need to contact you in an emergency.

**Academic misconduct:** No collaboration is allowed. Violations of academic honesty will be dispatched in accordance with the university policy.

**Pass/Fail:** Each subject is graded on a scale between 0 and 10. For each subject, a score of 7 and above indicates passing the subject, whereas a score below 7 indicates failing the subject. A student passes the CE if the student passes all subjects tested. Alternatively, a student fails the CE if the student fails at least one of the subjects.

**Retaking:** If a student decides to retake the CE, s/he will only be tested on the subject(s) failed during the first time. If the student fails the CE twice, the student is dismissed from the Ph.D. program.

\(^1\) research seminar and directed research hours cannot be used to satisfy the course credit hour requirements; independent study can be used to satisfy the course credit hour requirements only if approved by the student’s dissertation committee.

\(^2\) eligible after passing the candidacy exam; up to 50% of dissertation hours can be fulfilled by directed research hours.

DOCTORAL COMMITTEE
A student has to form his/her doctoral committee before the candidacy exam. A committee must consist of at least five members: three from within the department (including the major professor), one from the College of Engineering (COE), and one from outside COE. Once a committee has been determined, the Supervisory Committee Appointment Form needs to be completed by the student and submitted to the committee members for their signatures.

Changes to a doctoral committee must be submitted on the Changes to Supervisory Committee Form. Signatures of faculty being added to the committee, along with the signature of the (co-) major professor(s), are required. Faculty who are removed from the committee are not required to sign the form, provided that the (co-) major professor(s) has signed. An approved and current committee form must be on file before student graduation may be certified.

CANDIDACY (QUALIFYING) EXAMINATION
The purpose of the candidacy (qualifying) examination is to determine whether the student possesses adequate coursework background and intellectual maturity to conduct independent research. The exam consists of the following steps:

(a) The student makes a 30-40 minute presentation of his/her completed coursework and research topic to the committee. Presentation of the research topic should include a discussion of the societal need, literature review, and broadly defined research objectives.

(b) The committee members provide questions for the written part of the exam. The student has 11 days to provide written responses to the questions.

(c) The major professor schedules a second committee meeting for the student to orally defend his/her responses. At this time, the committee can ask a student to take additional coursework to make up any perceived deficiency.

If a student passes the candidacy exam, the Admission to Doctoral Candidacy Form has to be submitted to the Graduate School. When the form is approved, the student is officially admitted into candidacy and is allowed to register for dissertation research hours starting the following semester.

If a student fails the candidacy exam, the committee will decide if the student can re-take the exam or if (s)he should be terminated from the doctoral program. If a second opportunity is granted, the committee will establish the terms, time frame and conditions of the exam. A second failure results in dismissal from the program.

PROPOSAL DEFENSE
A student must schedule a doctoral committee meeting to orally defend the dissertation research (s)he proposes to do. The student makes a 45-60 minute presentation followed by questions and answers. Committee members can also make suggestions based on the proposed research. At the end of the meeting, the committee makes a decision as to whether the student may continue working on the dissertation topic (no form is required).

DISSERTATION DEFENSE
After the proposal defense, the student will complete the proposed dissertation research and write a dissertation document according to the dissertation guidelines. It is a student’s responsibility to submit his/her dissertation to an appropriate plagiarism detection software through Canvas and attach the generated report. After the doctoral committee has determined that the final draft of the dissertation is suitable for presentation, an oral dissertation defense must be scheduled and announced (email Gloria Latter to request an announcement). There must be at least 4 months between the proposal defense and the dissertation defense. The defense is open to the public; the voting is not public.

The final defense is administered by a defense chair, nominated by the major professor, who is not a member of the student’s doctoral committee and not a member of the student’s home department. The student makes a 45-60 minute presentation focusing on the innovative aspects of his/her research, following by questions and answers. The committee members can ask the student to make corrections before submitting the final document.

Following the completion of these proceedings, the defense chair will ask all visitors and the candidate to leave. The defense chair will preside over the deliberations and voting of the committee, but is not to participate in the voting. The voting is to be limited to “pass” and “fail” votes. The vote of the doctoral committee must be unanimous and recorded on the Certificate of Approval. The College Graduate Dean will resolve disagreements within the committee.

After a successful dissertation defense, the student submits the final dissertation manuscript to the Graduate School according to the thesis and dissertation guidelines.