

PHILOSOPHY DOCTOR IN INDUSTRIAL ENGINEERING (PhD 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<sup>1</sup>, 20+ of which must at 6000 level
- 20+ dissertation hours<sup>2</sup>
- Passing of the comprehensive exam, candidacy exam, proposal defense, and final dissertation defense
- A minimum of two (at least one accepted, one submitted) refereed journal publications before graduation
- 3.0+ GPA

**Core courses**

ESI 6491 Linear Programming & Network Optimization  
ESI 6213 Stochastic Decision Models I  
ESI 6635 Advanced Analytics I  
EIN 6936 Data-driven Modeling for Complex Systems

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**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:* Students should take the exam after completing their core course requirements, preferably at the end of their second semester but no later than their fourth semester. The exam is administered once a year in May. The exam is administered between 9:00 am and 5:00 pm on the exam day.

*Content:* The exam covers four PhD core subjects.

*Registration:* In February the graduate director sends an email to all doctoral students, which contains the exam date, registration deadline, and registration form. Each student *must* submit his/her registration form to the graduate director by the specified deadline. The graduate director requests each instructor to prepare CE questions and send them 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.
- 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 program.

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<sup>1</sup>research seminar and directed research hours cannot be used to satisfy the course credit hour requirements; independent study can be used only if approved by the student's dissertation committee.

<sup>2</sup>eligible after passing the candidacy exam; directed research may satisfy up to 50% of the dissertation hours requirement.

## 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.

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, 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.

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## CANDIDACY (QUALIFYING) EXAMINATION

The purpose of the candidacy (qualifying) examination is to determine if the student possesses adequate coursework background and intellectual maturity to conduct independent research. The exam has 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 committee makes a decision as to whether the student passes the exam. The committee can ask the student to take additional coursework to make up any perceived deficiency.

If the student passes the candidacy exam, the admission to doctoral candidacy form has to be submitted to the Office of Graduate Studies (the form is available at their website; follow the instructions closely). When the form is approved, the student is allowed to register for dissertation research hours starting the following semester.

If the 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 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 the dismissal from the program.

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## 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 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 submission is required).

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## DISSERTATION DEFENSE

After the proposal defense, the student will complete the proposed research and write a dissertation. It is a student's responsibility to submit his/her dissertation to an appropriate plagiarism detection software through Canvas and attach the generated report. An oral dissertation defense must be scheduled and announced (email the academic program specialist to request an announcement). There must be at least four 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 presided by a defense Chair, nominated by the major professor, who can be an external committee member from outside the department or a non-committee graduate faculty member. The defense Chair from another institution must be approved for Affiliate Graduate Faculty status. The Chair introduces the committee members. After the major professor introduces the candidate, the latter makes a 45-60 minute presentation focusing on the innovative aspects of his/her research, followed by questions and answers. The committee members may ask the student to make corrections before submitting the final document.

At the end, the Chair will ask all visitors and the candidate to leave. The Chair will preside over the deliberations and voting of the committee, but is not to participate in the voting (unless s/he is a committee member). The voting is to be limited to "pass" or "fail" votes. The committee's vote is considered passing, if each member votes "pass". The vote must be recorded on the Certificate of Approval. The College Graduate Dean will resolve disagreements within the committee. After a successful dissertation defense, the student makes necessary corrections and submits a final dissertation document.

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