Doctoral Program in Industrial Engineering
University of Louisville

FAQ

1/11/2023
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A. OVERVIEW

1. What are the requirements for the doctoral degree?
The doctoral degree is awarded upon completion of the following requirements:
   - **Admission**: Student must be formally admitted to his or her degree program.
   - **Coursework**: Student must complete a curriculum of courses. See answer to question A.2.
   - **Advancement to Candidacy**: A student is advanced to candidacy for the PhD when he or she has completed satisfactorily all the required coursework, has completed Milestone 1 (see answer to question A.3.) and has passed the Doctoral Qualifying Exam (DQE) [Milestone 2 – see answer to question A.3.].
   - **Dissertation**: The candidate must present a dissertation on a topic related to his or her area of specialization that presents the results of original research and gives evidence of excellent scholarship. The dissertation must be approved by the professor or committee under whose direction it is written. At the time of the final defense the student is supposed to have at least one paper submitted to a peer reviewed journal.

2. What is the required coursework to earn the doctoral degree?
   - Approved Master’s level coursework: **30 credit hours** *(If you already have an approved Master’s degree, you automatically get 30 credit hours)*
   - Technical electives: at least **15 credit hours** *(6 credits in student's focus area of research + 9 credits of electives – Non-IE electives must be approved by advisor and Department Chair)*
   - IE700 (dissertation research in IE): at least **9 credit hours**
   - 3.0 GPA or better
   - At most 6 hours of C grades counted towards your degree

3. What are the main milestones of the IE-PhD Program?
There are five main milestones to earn your doctoral degree in Industrial Engineering at the University of Louisville as summarized in the table below:

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milestone 1: Dissertation Topic and Advisor's selection</td>
<td>9-12 months from enrollment</td>
</tr>
<tr>
<td>Milestone 2: Doctoral Qualifying Exam (DQE)</td>
<td>12-16 months from enrollment</td>
</tr>
<tr>
<td>Milestone 3: PhD Committee Members selection</td>
<td>In agreement with your advisor (ideally before the end of the 3rd calendar year)</td>
</tr>
<tr>
<td>Milestone 4: PhD Proposal Defense</td>
<td>In agreement with your advisor (ideally before the end of the 4th calendar year)</td>
</tr>
<tr>
<td>Milestone 5: PhD Dissertation Defense</td>
<td>In agreement with your advisor (within 4 years from candidacy)</td>
</tr>
</tbody>
</table>

4. When does the candidacy phase of my dissertation begin?
Students enter into candidacy after the completion of:
- **Required coursework**
- **Milestones 1 and 2**

After entering candidacy status, students need to be enrolled in DOCT 600-03. They should only need to enroll themselves in the first semester and then they will automatically be enrolled for every semester after that until they apply for their degree. This typically occurs 12-16 months from enrollment.

5. **When should I select a dissertation topic?**
By the end of the 12th month from enrollment, the PhD student must accomplish Milestone 1 (300-word summary of the dissertation topic and advisor signature).

**B. DOCTORAL QUALIFYING EXAM (DQE)**

1. **When am I required to pass the DQE?**
Suggested time to take the DQE (Milestone 2) is by the end of the 16th month from enrollment (4th semester including summers).

2. **How long is the DQE?**
The qualifying exam will contain two parts: written and oral. The lengths for the written and oral exams are expected to be 1-2 weeks and 2 hours, respectively. However, the exam committee makes the ultimate decision on the exact length for both exams.

3. **What are the potential outcomes of the DQE?**
Possible outcome of the DQE is either PASS or FAIL. If the student passes the DQE, then s/he attains candidacy status. If the student fails the DQE, then, upon DQE committee recommendation, the student may be allowed to retake the exam. Retake must occur at the end of the following semester. Failure on the second attempt would result in the student being dismissed from the program.

**C. ADVISOR AND DISSERTATION COMMITTEE**

1. **When should I select my advisor?**
While a temporary advisor would be appointed at the onset of your admission (based on the initial match given the student's interest and advisor’s willingness), a permanent advisor must be identified by the end of the 12th month from enrollment (which is Milestone 1).

2. **How often should a student communicate with his/her advisor?**
Regular communication with your advisor is extremely important. It is student’s responsibility to regularly meet with the advisor to ensure steady progress. Minimum requirements for continuous advising are the following:
   o Each student MUST meet with the advisor at least once a month. Typically, it is expected that they meet twice a month to ensure continuous progress towards their dissertation. The advisor may require weekly meetings as well.
   o If the student is unable to meet per advisor requirements (and a gap of no more than a month), they must inform their advisor ahead of time. After two missed appointments
without informing the advisor (or without a legitimate reason), the advisor may decide to step down from his/her role. If this occurs, and a new advisor is not identified in 30 days, then the student will not be able to continue in the program.

- Your advisor may also determine that sufficient progress has not been made over several months and decide to step down. If an advisor decides to step down and a new advisor is not identified in 30 days, then the student will not be able to continue in the program.

3. Who qualifies as my advisor and committee members?
Members of the UofL graduate faculty and approved non-UofL members.

4. What is the role of the dissertation research committee chair?
The dissertation committee chair is the student's research advisor who works with the student on all or most chapters and likely will examine and approve the proposal draft chapters/materials prior to submitting it to the rest of the committee for review and comment.

5. How many members should there be on my dissertation committee?
The dissertation committee will consist of at least four voting members of the graduate faculty. At least three of the committee members will be from the IE department and at least one from outside the department. A non-IE member, but a faculty from UofL, can be from any department (e.g., CECS, Mathematics) with approval by the advisor and the Director of the Doctoral Program (PhD-DGS). If the non-IE faculty is a non-UofL member, then they MUST be approved by the Speed School; please contact the PhD-DGS for information on the approval process. At most one non-UofL member can be a voting member on the committee. The chair of the dissertation committee will be the student’s research advisor. Consult with your research advisor on forming the committee.

6. When should I select the dissertation committee members?
Selection of your dissertation committee members is Milestone 3. The suggested time is before the end of the 3rd calendar year from enrollment in the program.

7. How often should a student in the candidacy phase communicate with the committee members?
Students are encouraged to discuss expectations about communication with their advisor and committee members early in the process to facilitate progress and keep the research project on track. The dissertation process works best when the student and dissertation committee have agreed upon a format and frequency of communication (for example, monthly memoranda from the student providing updates on the student’s progress, or explicit deadlines for committee members to review chapters or related materials) and when timelines for submission of research products and for review of chapters or other materials are clarified and respected.

8. When should the Dissertation Committee Selection form be completed?
See table in answer to question A.3.
D. PREPARATION PHASE/REGISTRATION REQUIREMENTS

1. What is the maximum time allowed to complete the doctoral program?
The time necessary to complete and defend a dissertation can vary by student, depending on the complexity of the topic, challenges in obtaining required data, or other considerations. While there is not a required timeline to complete the dissertation, most students complete their doctoral dissertation within 4 years (post Masters) from enrollment. In any case, once the student enters candidacy status, the final proposal MUST be defended within 4 years from candidacy and not earlier than 9 months from candidacy.

E. THE PROPOSAL

1. What is expected in the dissertation proposal?
The dissertation proposal should provide a clear and thorough plan of the proposed research. The proposal includes the first several chapters of what will become the dissertation. Proposal should also include an anticipated timeline that accounts for all phases of the dissertation research, a discussion of potential challenges to meeting that timeline, and ways to address the challenges. Please consult with your advisor on the expectations for the contents of your dissertation proposal.

2. Does the full dissertation committee review the entire dissertation proposal or just chapters/sections?
All committee members will review the entire dissertation proposal and provide feedback either before the student’s dissertation proposal defense or during the dissertation defense.

3. How much time do students need to give dissertation committee members to review the final version of the proposal before the dissertation proposal defense?
The dissertation proposal should be sent to the committee members at least two weeks prior to the dissertation proposal defense.

4. Who decides when the student is ready to defend the dissertation proposal?
Student’s research advisor determines that the student is ready to move to the proposal defense phase before the defense can be scheduled.

5. What is expected in the dissertation proposal defense?
Students prepare a formal oral presentation as part of their dissertation proposal defense. Presentations should include sufficient detail to give the committee members confidence that the candidate can accomplish what is proposed, that the study is methodologically rigorous, and that the topic and approach will make a valuable contribution to the field of study.

6. How long is the dissertation proposal defense?
The proposal defense is scheduled for at least 100 minutes: 40 minutes for the student's presentation (open doors) + 10 minutes of Q&A with the audience (open doors) + 50 minutes or more for Q&A with the committee (closed doors).
During the first 40 minutes, the candidate presents an overview of the research proposal. This requires that the candidate be prepared to present the entire proposal (with the use of a PowerPoint slide presentation and handouts, if appropriate) in sufficient detail to provide an overview of the research problem, key research objectives, the proposed approach (with initial findings, if possible), and a time-line for completion of the proposed work.

The members of the committee will then have the opportunity to question the student on any aspect of the proposal. The student must be prepared to explain the details of the proposed research and defend key decisions made in the design of the research project. The student may also be asked to consider challenges to completing the research, the potential contribution of the work to the field, various assumptions included in the approach, and/or other aspects of the research.

All members of the dissertation committee must attend the proposal meeting, unless special arrangements are made a priori (with PhD-DGS approval). While it is advisable that committee members are physically present in the room, virtual meetings are reasonable.

7. What are the potential outcomes of the proposal defense?
There are two possible outcomes of the proposal defense:

- **Satisfactory**: the committee has accepted the proposal, and the student is cleared to continue working on the proposed research and finish writing the dissertation.
- **Unsatisfactory**: the committee may recommend that either i) a second defense is permitted after a period of additional preparation, or ii) the student is dropped from the PhD program.

F. THE DISSERTATION

1. What is the format for the dissertation?
The final dissertation essentially builds upon the format of the dissertation proposal. Chapters of the dissertation proposal may constitute individual publishable papers that are, however, linked together under a unifying theme. The dissertation should also include a short, but cohesive, abstract to indicate the main theme and the main contributions of the research. A Conclusions and Future Work section must be added to close the loop on the unifying theme. Please work closely with your advisor and the committee to ensure that their expectations on the format are accounted for.

G. THE DISSERTATION DEFENSE

1. When is the student ready to move to the oral defense?
In order to schedule the final defense, the student’s research advisor must agree that the candidate is ready to defend the dissertation. To qualify for dissertation defense, at least one manuscript must be under review, in press, or published by a peer-reviewed journal prior to scheduling the final defense.
2. How much time should students give committee members to review the final dissertation?
Students must send the committee members the entire dissertation for review at least two weeks before the final defense.

3. How long is the oral dissertation defense?
Final defense will take around 150 minutes: 45 minutes for student’s presentation (open doors) + 15 minutes of Q&A with the audience (open doors) + 60-90 minutes for Q&A with the committee (closed doors)
Suggested organization of the final defense
   a. Student presentation (open doors)
   b. Q&A from the audience (open doors)
   c. Q&A from the committee members (closed doors)
   d. Committee discussion (closed doors)
   e. Convey decision to the candidate (closed doors)

4. What is the result of the dissertation defense?
There are three possible evaluation decisions for the doctoral defense (listed below). A decision cannot have more than one opposing vote. If the decision is not unanimous (i.e., there is one opposing vote) the student can still pass. The dissenting member can decide not to sign off on the final form or the committee can ask the student to adjust the dissertation so that all members are in agreement with the outcome.

Possible outcomes of the final defense:
- **Pass**: it requires that both the defense and the dissertation are acceptable. The student is considered ready to earn the doctoral degree, and the committee members sign the PhD signature page and the Milestone 5 section of the PhD Milestone form.
- **Pass with revisions**: the committee decided that both the defense and the dissertation are acceptable, but the committee requires revisions to the dissertation, which will be checked by the entire committee or by the advisor only. The committee should also agree upon the length of time allowed for submission of the revised dissertation. All of these must be communicated clearly to the student at the end of the defense. Once the revised document has been approved, the student is ready to earn the doctoral degree, and the committee members sign the PhD signature page and the Milestone 5 section of the PhD Milestone form.
- **Fail**: the committee has decided that the dissertation is unsatisfactory and may not be rewritten. Committee members sign the PhD signature page and the Milestone 5 section. This decision normally results in the termination of a doctoral student’s program. In rare circumstances, the committee may decide to give the student another chance to return at a later date and defend the work. This must be agreed upon by the committee (unanimously), accepted by the student, and also approved by the PhD-DGS.