

# PhD Degree Requirements for the Human Factors and Ergonomics Specialization

Approved May 6, 2016

The PhD qualifying examination in the Human Factors and Ergonomics area is not administered as a conventional written examination taken on a specific day, but is given as a seminar oral presentation requirement that must be taken within two semesters (i.e. Fall and Spring) after registering to take the qualifying exam. Students must satisfy the breadth requirement<sup>1</sup>, and must apply for the qualifying exam prior to scheduling the pro-seminar. In order to pass the qualifying exam requirement in Human Factors and Ergonomics, students must pass the seminar oral presentation requirement no later than their seventh semester of graduate study<sup>2</sup>.

The broad objective of the qualifying exam is to help the department determine whether an individual is likely to succeed in the PhD program. Graduate studies are different than undergraduate work and require both the skills and an interest in going beyond textbooks to create new knowledge. This requires an ability to understand and critically evaluate the literature, to create new ideas and questions by synthesizing the literature, as well as understanding what constitutes good research and how to design research that is likely to create new knowledge. We do not expect students to be ready to demonstrate all of these capabilities during the qualifying exam, but we do want to assess their aptitude and interest. While the PhD preliminary oral exam signifies when a student is ready to strictly carry out research for the rest of their program, the seminar oral presentation indicates if a student has the potential to succeed.

The specific aims of the seminar oral presentation are for students to integrate ideas from the human factors and ergonomics literature and demonstrate: 1) an understanding of the human factors context of their topic area, 2) an ability to assess the state of knowledge regarding their topic, and 3) an understanding and appreciation of different viewpoints broadly related to their topic. After registering for the PhD qualifying examination<sup>3</sup>, the student discusses the topic and boundaries of the seminar oral presentation with his or her PhD major advisor and two faculty members comprising the committee, who agree to attend the student's seminar oral presentation, ask questions and evaluate their performance. We assess the aptitude and interest of students by asking them to integrate ideas by researching the literature related to their intended research area. The oral exam provides an opportunity to present the links between papers and concepts from their review of the literature, and answer questions posed by each of three committee faculty members (including the major advisor).

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<sup>1</sup> "The breadth requirement is to make the Ph.D. student achieve minimum competence in multiple areas of industrial and systems engineering. It consists of taking at least two courses (6 credits) from a list of ISyE courses and attaining a grade of B or above in both courses."

<sup>2</sup> "Each student who wants to be a PhD candidate in the Department of Industrial and Systems Engineering must satisfy the department's qualifying examination requirement within their seventh semester of graduate study."

<sup>3</sup> Students are not registered for the qualifying exam until they obtain a signature from a qualified faculty member who is willing to serve as the major professor for this student if he/she successfully completes the Industrial Engineering Ph.D. Qualifying Examination requirements.

- The student registers to take the PhD qualifying examination and must satisfy the regular department deadlines and requirements.
- In consultation with his or her major advisor, the student requests two human factors area faculty members to agree to serve on their seminar committee.
- Planning for the seminar oral presentation is individualized for every student and faculty advisor, and may or may not require that the student prepare a written report as part of their preparation.
- Students must coordinate with their committee to schedule their oral presentation.
- The seminar typically involves a 45-minute public presentation, followed by questions and answers.
- The oral presentation is open to other students and faculty members, followed by public questions by the attendees. After public discussion, the oral exam is closed to other students.
- Passing the exam requires a judgment of passing by two of the three committee members. The grading is based on the ability to integrate, evaluate, and discuss the literature; to discuss the links between the papers rather than present the contents of the individual papers. The student will receive a grade of "Pass" or "Fail".
- The student will be provided written feedback about why they received what grade they received so they can use this information moving forward
- The student's major advisor reports the outcome of the seminar presentation to the Student Services Office.