The Industrial & Systems Engineering PhD Qualifying Exam is offered once per year, in the winter quarter. The Qualifying Exam must be taken no later than the second time it is offered while in residence. Students planning on taking the Qualifying Exam must notify their intent to the ISE Student Services Center in mid-November. Other specific details will be announced by the ISE Student Service Center from time to time.

**Course Requirements:**
Students are expected to acquire a breadth of knowledge in industrial engineering before taking the Qualifying Exam. INDE 508, INDE 513 and INDE 524 are PhD core courses. Each student is required to successfully complete these three core courses before taking the Qualifying Exam. Students must also successfully complete INDE 591, INDE 592, and INDE 593 before taking the Qualifying Exam. Students are required to take at least one non-core course from each of the three sections below before their PhD degree can be awarded. Students are advised to (but not required to) complete these non-core courses before taking the Qualifying Exam.

**Exam Format:**
The qualifying exam will include a one-week take-home written examination followed by an oral exam. The oral exam is administered by an ISE faculty sub-committee. The written test is open book, notes and other reference materials. Students will be allowed to refer only to their solutions to the written exam during the oral exam. On the written exam, students will be required to answer one question each from Sections A, B, and C below.

**Section A:**
Courses that cover relevant topics include:
- IND E 508, Stochastic Processes in Engineering
- IND E 513, Linear Optimization Models
- IND E 516, Applications of Optimization
- IND E 535, Engineering Simulation

**Section B:**
Courses that cover relevant topics include:
- IND E 521, Quality Control in Manufacturing
- IND E 524, Robust Design & Quality Engineering
- IND E 526, Reliability in Product Design & Testing
- IND E 546, Analytical Methods in Human Factors & Transportation

**Section C:**
Courses that cover relevant topics include:
- IND E 543, Virtual Interface Technology
- IND E 549, Human Factors in Engineering Design
- IND E 570, Supply Chain Systems