Ph.D. in Engineering
Engineering Education Concentration
Recommended Curriculum for students admitted for or after Spring 2016 (3/2016)\(^1\)

Degree Codes: ES PhD ENGR
Contact: Dr. Kelly Crittenden

**General Core Courses**
Take the following 3 courses (9 SCH)
- STAT 620 Theory of Probability
- STAT 621 Theory of Statistics
Choose ONE course from the following:
  - ENGR 641 Formulation of Solutions to Engineering Problems
  - MATH 574 Numerical Solutions to PDEs

**Engineering Education Core**
Take the following 3 courses (9 SCH)
1. ENGR 601 Foundations in Engineering Education
2. Choose TWO courses from the following:
   - PSYC 502 Cognitive Psychology
   - PSYC 507 Learning and Development
   - PSYC 513 Organizational Psychology
   - PSYC 523 Leadership and Decision Making
   - ENGR 510 Research Methods

**Engineering Discipline Core\(^2\)**
Take any 6 courses (18 SCH total) from a core MS/ENGR area of concentration.
Courses chosen from the core MS/ENGR area of concentration.

**Directed Study and Special Topics** (12 SCH total)
At least one Doctoral level Special Topics (ENGR 657) and two Doctoral Independent Study (ENGR 650) courses are required as part of the course work for the degree. Independent Study can be a preparation for the research leading to the dissertation.

**Qualifying Examinations**
- ENGR 685 Written Qualifying Examination
- ENGR 686 Oral Comprehensive Examination (Preq. or coreq., ENGR 685)

**ENGR Dissertation Enhancement Seminar:** (3 SCH)
- ENGR 611 (Section 2) ENGR Dissertation Enhancement Seminar (3 SCH total)

**Research and Dissertation** Minimum 18 hours total (ENGR 651 and ENGR 751).
- ENGR 651 Pre-Candidacy Doctoral Research
- ENGR 751 Post-Candidacy Dissertation Research
Complete 9 SCH of ENGR 651 prior to ENGR 686. After successful completion of ENGR 686, the student will become a PhD Candidate and will complete at least 9 SCH of ENGR 751. For

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\(^1\) Optional for students admitted to the program for Winter 2015-16 quarter or before.
\(^2\) All PhD students in this track must earn an MS in Engineering. The 12 Semester Credit Hours chosen in the Engineering Discipline Core should be chosen in consultation with the student’s Dissertation committee so that they will serve as courses on the MS in Engineering Plan of Study.
ENGR 651 or ENGR 751, registration in any quarter is for 1 to 3 semester hours or multiples thereof, up to a maximum of 9 semester hours per quarter.

**Total:** 45 SCH of coursework + 3 SCH of doctoral seminar courses + 9 SCH of Pre-candidacy Doctoral Research + 9 SCH of Post-candidacy Dissertation Research = 66 SCH