

**DOCTOR OF PHILOSOPHY (Ph.D.)
PROGRAM REQUIREMENTS AND
GUIDELINES**

THE UNIVERSITY *of* TENNESSEE

***DEPARTMENT of INDUSTRIAL and
INFORMATION ENGINEERING***

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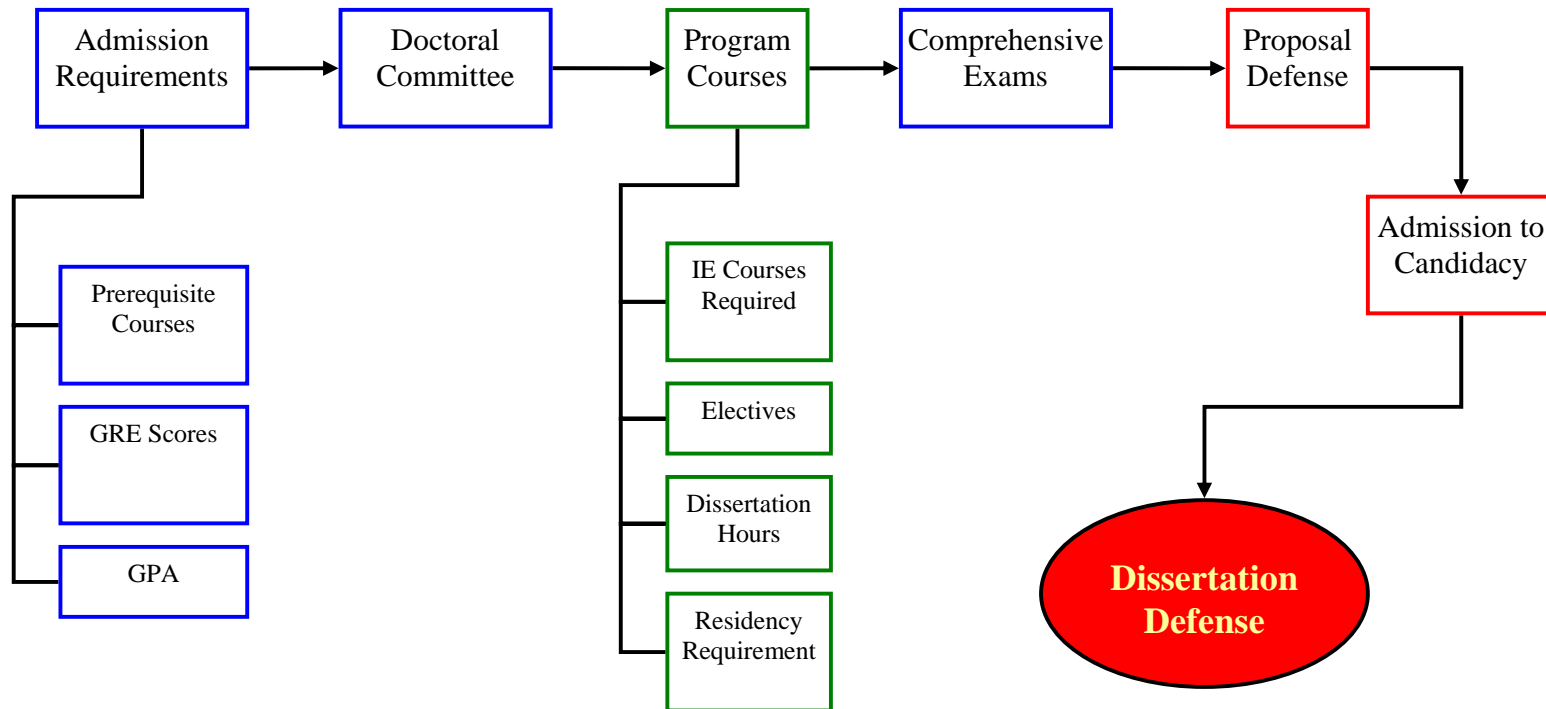
Based on 2007-2008 Graduate Catalog
(Revised - Spring 2007)

NOTE: Changes in requirements and guidelines from previous revisions apply to students beginning the Ph.D. program Fall Semester 2007 or later. Students accepted into the program prior to this time are encouraged to meet these revised requirements and guidelines.

Department of Industrial & Information Engineering
Ph.D. Program

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I. Ph.D. Program Flowchart



II. ADMISSION REQUIREMENTS

In order to pursue any graduate program at The University of Tennessee, a formal application for admission must be made to The Graduate School. The graduate catalog includes instructions for the application procedure and a *Graduate Application for Admission* form. To request admissions information from the Graduate School, complete and submit the on-line application at <http://gsapp.dii.utk.edu/>. From this site you can download a copy of the entire application form, after you complete the on-line application and are ready to submit it, you will need to be able to print the signature form on a printer. The online graduate catalog can be found at <http://web.utk.edu/~gsinfo/toc.htm>

Admission to The Graduate School does not ensure acceptance into a specific degree program, nor admission to candidacy for the degree desired. The Department of Industrial and Information Engineering must approve all students for admission to potential degree status and non-degree status in industrial engineering, and recommend appropriate action to The Graduate School. Admission by the Department of Industrial and Information Engineering is determined on a competitive basis. In addition to the minimal requirements of the Graduate School, the Department of Industrial and Information Engineering also requires the following:

Department Admission Requirements of the Ph.D. Program

- *The Graduate Committee will evaluate each applicant's background and may require additional or leveling coursework prior to admission.*
- Undergraduate degree and/or Masters degree from a qualified Engineering, Science or related program. U.S. Engineering programs must be ABET accredited.
- GRE Scores (General Test); requires a minimum score of 600 for quantitative and 40 on the analytical writing exam, any exceptions must obtain consent of the department Graduate Committee.
- Minimum GPA of 3.0 in a 4.0 scale during the Masters level coursework, or during the senior year.
- English certification (e.g. TOEFL) as specified by the graduate school is required for all international students unless they have completed an undergraduate or masters degree program at an English based institution.
- Essay (2 double-spaced pages) *Current Topic:* How will my experiences in the PhD. IE. Program at the University of Tennessee enhance my career?
- Admission Recommendation Forms or letters of reference from 3 suitable references.
- EM 537- Analytical Methods for Engineering Managers is required for students who do not have at least a 3.5 in Industrial Engineering.

III. DOCTORAL COMMITTEE

Each student must have a doctoral committee composed of at least four faculty members holding rank of assistant professor or above; three of whom, must be approved by the Graduate Council to direct doctoral research. At least one member must be from an academic unit other than that of the student's major field. This committee is nominated by the department head or college dean and approved by the Dean of Graduate Studies. Each committee must have a chair or co-chairs, as deemed appropriate.

The committee should be formed during the student's first year of doctoral study. Subject to Graduate Council policies and individual program requirements, the committee must approve all coursework applied toward the degree, certify the student's mastery of the major field and any cognate fields, assist the student in conducting research, and recommend the dissertation for approval and acceptance by Graduate Student Services.

IV. PROGRAM PLAN

Program of Study (Coursework Requirements)

The total program of study requires a minimum of 72 graduate credit hours beyond the Bachelor's degree, exclusive of credit for the master's thesis. This includes a minimum of 36 graduate credit hours of coursework beyond the bachelor's degree and a minimum of 24 credit hours of doctoral research and dissertation work. For a master's program completed at another institution or in another field, the requirement may exceed the 36 credit hours of coursework (other than research and dissertation) dependent on the previous program of study.

Coursework Requirements (a minimum of 72 graduate credit hours):

Entrance Requirement

EM 537 Analytical Methods for Engineering Managers (required for students who do not have a BS in Industrial Engineering)

Industrial and Information Engineering (a minimum of 24 graduate credit hours):

500-level or higher (at least 15 credit hours):

The following two courses, or the equivalent, are required:

IE 516 Statistical Methods in Industrial Engineering

IE 522 Optimization Methods in Industrial Engineering

3 additional IE 500-level courses (9 credit hours) with approval of major professor

600-level (at least 9 semester hours, as required by Graduate School):

Select three IE 600-level courses (at most 3 semester hours from IE 691, 692, and 693) with approval of major professor

Other (12 graduate credit hours including a minimum of 9 credit hours from Math and Statistics)

Math courses 400 level or higher

Statistics courses 500 level or higher

Dissertation (a minimum of 24 semester hours)

IE 600 Doctoral Research and Dissertation

Time Limit/Residency Requirement and Grade Point Average

The comprehensive examination must be taken within five years, and all requirements must be completed within eight years, from the time of the student's first enrollment in a doctoral degree program.

Residence is defined as full-time registration (9-12 credit hours) for a given semester on the campus where the program is located. The summer term is included in this period. During residence, it is expected that the student will be engaged in full-time on-campus study toward a graduate degree.

For the doctoral degree, a minimum of two consecutive semesters of residence is required. A statement as to how and during what period of time the residence requirement has been met will be presented on the Application for Admission to Candidacy form.

A grade point average (GPA) of at least 3.0 (B) must be maintained in all graduate coursework.

V. COMPREHENSIVE EXAMS

The comprehensive exam content will be determined and administered by the student's doctoral committee. The comprehensive examination must be passed prior to admission to candidacy. Both a written and a verbal component are required.

VI. PROPOSAL DEFENSE

After successful completion of the comprehensive exam, the student prepares a dissertation proposal. When approved by the major professor, the student will provide the written research proposal to each member of the doctoral committee, schedule a committee meeting, and make an oral presentation of the proposal.

The admission to candidacy for the doctoral degree is approved after the successful proposal of dissertation research. Proposal requirements include the following elements:

- A thorough literature survey
- The objectives of the dissertation research and justification of the objectives
- A pilot experiment or preliminary results whenever possible
- Proposed research methodology

VII. ADMISSION TO CANDIDACY

Admission to candidacy reflects agreement among the student, doctoral committee, graduate committee, and The Graduate School that the student has demonstrated the ability to do acceptable graduate work and that satisfactory progress has been made toward a degree. This action connotes that all prerequisites to admission have been completed, and a program of study has been approved, and the coursework is nearly completed.

A student may apply for admission to candidacy after passing the comprehensive examination and a successful defense of the dissertation proposal, and maintaining at least a B average in all graduate coursework. The student and the major professor are responsible for filing the Admission to Candidacy Application form, which lists all courses to be used for the degree, including courses taken at UT Knoxville or at another institution prior to admission to the doctoral program. It is signed by the doctoral committee and by an authorized representative of the IIE department. Admission to candidacy must be applied for and approved by the Graduate School at least one full semester prior to the date the degree is to be conferred.

VIII. DOCTORAL RESEARCH AND DISSERTATION

The student must complete at least 24 semester hours of IE 600 (Doctoral Research and Dissertation). At least 3 credit hours of IE 600 is taken continuously every semester (including the summer term) after the Admission to Candidacy Application form and the research proposal are approved. Once registration for IE 600 begins it is a continuous effort (see the graduate catalog for additional information on continuous registration).

Dissertation

The dissertation represents the culmination of an original major research project completed by the student. The organization, method of presentation, and subject matter of the dissertation are important in conveying to others the results of such research.

A student should be registered for the number of dissertation hours representing the fraction of effort devoted to this phase of the candidate's program. Thus, a student working full-time on the dissertation should register for 12 hours of IE 600 per semester.

Defense of Dissertation Examination

A doctoral candidate must pass an oral examination on the dissertation. The dissertation, in the form approved by the major professor, must be distributed to the committee at least two weeks before the examination. The examination must be scheduled through the Office of the University registrar at least one week prior to the examination and must be conducted in university-approved facilities. The examination is announced publicly and is open to all faculty members. The defense of dissertation will be administered by all members of the doctoral committee after the completion of the dissertation and all course requirements. This examination must be passed at least two weeks before the date of submission and acceptance of the dissertation by Graduate Student services. The major professor must submit results of the defense by the dissertation deadline.

Two copies of the dissertation (prepared according to the current edition of instructions in the UT Knoxville Guide to the Preparation of Theses and Dissertations) must be submitted to and accepted by The Graduate School. Each copy must include an approval sheet, signed by all members of the doctoral committee, which certifies to The Graduate School that they have examined the final copy and found that its form and content demonstrate scholarly excellence. Microfilm Agreement form, Survey of Earned Doctorates, and Abstract form are also submitted at this time. The student should check with the chairperson of the graduate committee concerning additional required copies of the dissertation.