Graduate Student Manual

2013-2014 Academic Year
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GRADUATE STUDENT MANUAL

Graduate Study Policies, Procedures and Requirements
Industrial and Systems Engineering Department
Texas A&M University

This manual provides information about the graduate programs in the Industrial and Systems Engineering Department at Texas A&M University to new and continuing graduate students. It establishes governing policies on a variety of topics including degree programs, q-drops, examinations, and financial assistance. Additional information is available in publications from the University Office of Graduate and Professional Studies.

I. GETTING STARTED

A. Registering for Classes

1. The Office for Graduate Programs, located in Room 4060 ETB, assists new graduate students with initial course selection and with identifying potential faculty advisors. The graduate program coordinator can help with any of the administrative requirements related to your education at Texas A&M University.

2. The Schedule of Classes for each semester can be obtained through the Howdy Portal at https://howdy.tamu.edu. Registration is also accomplished through the Howdy Portal.

3. When a class you want is filled, you must obtain permission from the course instructor before you can be forced into the class.

4. Registration for courses requiring an advisor (a directed studies course, an internship course, or a research course) must be approved through the graduate program coordinator. Additionally, departmental approval is necessary if an industrial and systems engineering graduate student wishes to register in any undergraduate freshman or sophomore-level course.

B. Temporary Advisors

A temporary advisor is a faculty member who provides direction during the time the student has no degree plan. When new students come to the department, they may or may not know the faculty. If they think they might want to work under the direction of a specific faculty member, then that faculty member can become the student’s temporary advisor. Or, if a new student already has a specific research interest, then the student should ask a faculty member -- in that specialty -- to act as a temporary advisor. In the
absence of a faculty advisor, the department's director for graduate programs can act as the temporary advisor.

The basic function of the temporary advisor is to help students as they adjust to their responsibilities as graduate students. This initial period allows students to validate, change, or establish a direction for their graduate studies. Students should not feel obligated to choose the temporary advisor as chair of their advisory committee. (The advisory committee is discussed in the "Graduate Program Requirements" section.)

C. Graduate Offices and Desk Space

Limited office space is available for graduate students. Offices are assigned according to departmental teaching and research needs. Requests for office space should be made to the director of graduate programs by a student's advisor.

D. Computers Facilities

The department maintains computers and facilities for industrial and systems engineering faculty, staff, and students. Microcomputers for student use are located in on the third floor of the Emerging Technologies Building. New students should check with the IT office (Emerging Technologies Building, Room 3019 or Student Computing Lab Room 3005) for instructions on setting up an industrial and systems engineering computer account. All computer users are asked to avoid waste (e.g., unnecessary printouts, use of laser printer for draft documents, etc.) and to be considerate of others using the facilities. The department uses a "card swipe" system to control entry into the computer rooms, so students will need their university identification for access to the departmental computers. Each person entering the computer room after hours must use their own identification to gain access. Please comply with the rules and polices established for these facilities.

The university has several computer centers available to all students. Some of the centers with easy access to students from ETB are the ones located in Room 021 WERC, Room 133 in Blocker, and in the Student Computing Center next to Evans library. (The computer center in Teague is also a graphics lab for students needing support with graphics output, color slides, etc.)

E. Travel and Leave Requests

Some students might have to travel on university business (usually because of a research project). Before traveling on university business, a travel and leave request must be submitted and approved. Reimbursement for travel expenses requires an account number that can be obtained from either the research supervisor or the advisory committee chair. The amount of expenses that can be paid by the university depends
on the type of research contract and the trip’s destination. Check with the financial management staff in Room 4021/4022 ETB regarding allowable expenses and procedures for approval. Travel and leave must be approved before leaving or expenses cannot be reimbursed and insurance coverage is jeopardized. After the trip, a travel voucher must be filed to justify the claimed expenses.

F. Mailboxes

Each graduate student is assigned a mailbox. Mailboxes for teaching assistants and some research assistants are located in the 4th floor hallway adjacent to the Grad Student Offices/Lounge area in 4050. Important university correspondence is delivered to student mailboxes, so students should be in the habit of checking their mail at least once per week, if not more often. The address for receiving off-campus mail is:

Industrial and Systems Engineering Department
Texas A&M University
3131 TAMU
College Station TX 77843-3131

For on-campus mail, the address for the Industrial and Systems Engineering Department is Mail Stop 3131. Boxes for outgoing mail (off-campus and on-campus) are next to the copier across from the department head’s office.

G. Common Areas

Graduate students have free use of the kitchen and dining area located in Room 4050. Please clean up after yourself and remove old food from the refrigerator regularly. Also note that all desks in 4050 are by assignment only. Graduate students also have use of the lobby seating area, outdoor common areas, teaming areas throughout the building, and may request the use of IE-controlled conference rooms.

H. Payment of Fees

Fees can be paid by mail, through the Howdy Portal or in person at the General Services Complex, Suite 2801. The waiver of out-of-state fees is automatically made for fellowship and eligible scholarship students.

I. Emergency Loans

Short-term loan funds at Texas A&M University have been established to provide assistance to students who experience temporary financial difficulty in connection with educational or educationally related expenses. Additional information can be found at the Student Financial Aid website https://financialaid.tamu.edu.
II. GRADUATE PROGRAM REQUIREMENTS


The university has designated certain course numbers to be reserved for specific purposes. ISEN 691 is for thesis or dissertation research; ISEN 692 is for research/projects for non-thesis degrees; ISEN 685 refers to a directed studies reading course; ISEN 681 is a seminar, in which faculty and students present their research results; and ISEN 684 is for an industrial internship. The courses ISEN 681, 684, 691 and 692 are taken on a pass/fail basis with a final grade of “S” (satisfactory) or “U” (unsatisfactory). In ISEN 685 students must be given a letter grade; therefore, at the start of the semester, it is important to know what is expected for the semester’s work (see page 19). A grade of “I” (Incomplete) in ISEN 685 is appropriate only for sickness or other extenuating circumstances.

ISEN 689 refers to "Special Topics" courses and usually covers developing research areas. Each time a new ISEN 689 course is taught, it has a different title that begins with "Special Topics in ...." When making out degree plans, it is important to use the exact title of the course as it is listed; otherwise, the Office of Graduate Studies will assume you never took the course.

J. Departmental Prerequisites

The prerequisites listed below are intended to ensure an adequate background in mathematics, computing, and engineering prior to pursuing graduate studies in industrial and systems engineering. In addition to departmental prerequisites, there may be prerequisites required by individual graduate advisory committees and by course instructors. Courses have been identified by their titles in the Texas A&M University Course Catalog. If you did your undergraduate work elsewhere, read the course description to assess if the course you took at another institution could qualify.

1. Two courses of engineering calculus: (MATH 151 and 152),
2. Two additional mathematics courses that require differential equations and linear algebra: (MATH 308 and 304),
3. A course of mechanics or calculus-based physics: (PHYS 218),
4. A course in calculus based probability and statistics: (STAT 601),
5. Proficiency in scientific computing programming: (CPSC 206),
6. A course in engineering economy: (ISEN 302 or 303), and
7. Two semesters of operations research are required that include both optimization and stochastic processes: (ISEN 420 and 421).

No prerequisite course may be taken on a pass/fail basis, and students must average a
“B” or better in their prerequisites with no single grade being than a “C.” Students with a cumulative grade point ratio for their prerequisites of less than a 3.0 will be placed on probation. If a student makes less than a 3.0 for prerequisite work while on probation, the department will ask the Office of Graduate Studies to remove him/her from the department’s graduate program. Although graduate courses may be taken before all prerequisite requirements have been satisfied, students must make significant progress each semester towards satisfying their prerequisites.

Most applicants lacking the prerequisite background are denied admission. Some applicants lacking the required prerequisites may be granted admission but with prerequisite courses required and identified at the time of admission. The assignment of these courses is made on the basis of transcripts and other evidence presented with the application. Because transcripts and records often do not clearly indicate course content, some prerequisite course assignments may be inappropriate. If an entering student feels this is the case and has proper documentation of course content, then the director of graduate programs can waive the course requirement. If a student claims to know the subject matter in a given prerequisite, but a transcript does not support that claim, then the student may request a waiver of the prerequisite course and take an appropriate graduate level course. If the student successfully passes the graduate level course, the prerequisite will be waived, and the graduate course may be used on the degree plan if it is acceptable to the student's advisory committee.

K. English Language Proficiency

The College of Engineering requires either a TOEFL score of 80 internet-based (213 computer-based or 550 paper-based) or a GRE verbal test score of 146 or higher for admission for non-U.S. citizens whose native language is not English. The university also requires that all non-U.S. students be verified for English language proficiency. Verification is accomplished by meeting the admissions standards of the TOEFL or GRE-verbal tests; thus, if an applicant is admitted below the university requirements, the student must either retake the TOEFL or GRE and receive the required test scores after being admitted, or pass the English language certification (described next). Texas A&M also requires that students be certified for English language proficiency before they can be a teaching assistant, and the department requires that all Ph.D. students (non-U.S. citizens) whose native language is not English be certified for English language proficiency. The university administers an English Language Placement Exam (ELPE) to students approximately two weeks before the first day of classes each semester. Certification for English language proficiency is achieved by passing the reading, listening, composition, and oral portions of the ELPE or receiving a grade of “A” or “B” in the associated ELI course(s). Students register for the ELPE online at http://dars.tamu.edu/Testing/ELPE.
Not making suitable progress towards required English proficiency is grounds for being placed on academic probation and possible removal from the department's graduate program.

L. Degree Plans and the Advisory Committee

The degree plan is the official document establishing a student's advisory committee and the specific courses required for the degree. In addition, it is the only document that officially qualifies the transfer courses from other universities that count toward the student's degree. The specific guidelines for degree plans are given under the "Master's Degrees" and "Doctoral Degrees" sections. This is overview of the steps for establishing a degree plan:

1. During the first semester, choose a direction for your emphasis within the department (i.e., decide on the specific degree in which you are interested and which aspect of industrial and systems engineering you want to emphasize). To help you in choosing a specific research direction, the Industrial and Systems Engineering web page (http://ise.tamu.edu) contains a listing of the faculty, their research and teaching interests, and a description of the major research initiatives within the department.

2. Discuss with one or more faculty members within the department your career objectives and what his/her degree plan and research requirements are. The process of establishing a degree plan is, in part, a search for compatibility between your career goals and the faculty member's research philosophy.

3. When you have determined the professor you would like as your advisor, ask that faculty member if he/she will serve as the chair of your advisory committee. Once an advisor is established, discuss with the advisor other individuals who could potentially serve as members of the committee.

4. Data for the degree plan are entered on-line (https://ogsdpss.tamu.edu). Care must be taken in filling out the forms properly (especially with respect to the names of 689 courses) to ensure that the Office of Graduate Studies (OGS) has proper records. General course requirements, other than your committee's, are listed in the following sections of this document under the particular degree of interest. It is important to remember that committee members may have requirements in addition to the departmental requirements.

M. Petitions

After the degree plan has been approved, it is still possible to change course selections.
A petition to the OGS accomplishes any variation to the degree plan. (Petitions may be obtained from the web site http://ogsdpss.tamu.edu.) Petitions are submitted online and then approved by all committee members. OGS petitions, once approved by the students' advisory committee, are routinely approved by the department head as long as university and departmental guidelines are followed, and the change does not appear to be an attempt to improve the degree plan grade point ratio.

Petitions are also used to change departments and restructure committees. Once a committee is formed, petitions must be approved by all committee members (both old and new members, if the committee itself is changing) as well as the department head. If the petition includes changing departments, both department heads must approve it.

N. Committee Responsibilities

The student's graduate advisory committee has the responsibility of assessing the appropriateness of the proposed degree program, research proposal, thesis or dissertation, and the final examination. In addition, the committee is expected to provide periodic advice and assistance to the graduate student. At the doctoral level, the committee also has responsibility for the Ph.D. preliminary examination and the Doctor of Engineering qualifying examination.
III. Master’s Degrees

O. The Master’s Degree Plan

The department offers three master’s degrees: The Master of Science degree in Industrial Engineering (M.S. in INEN), the Master of Engineering degree in Industrial Engineering (M.Eng. in INEN), and the Master of Science degree in Engineering Systems Management (M.S. in ENSM). The M.S. in INEN degree requires at least 32 hours when the thesis option is selected and at least 36 hours when the non-thesis option is selected. The M.S. degree is principally for students interested in continuing to a Ph.D. program. The M.Eng. degree is a non-thesis degree requiring at least 30 hours and is more suitable for students planning to enter the industry after graduation. The M.S. in ENSM is only offered as a 36 hour non-thesis degree and is geared more towards those wishing to enter industry upon graduation. For information regarding the Engineering Systems Management degree plan, please see the degree plan checklist included in the appendix.

The university allows a maximum of 12 hours of transfer credit. However, graduate courses taken at other universities are not automatically transferable. The department’s director of graduate programs in conjunction with the student’s graduate advisory committee will determine if the courses being considered for transfer were taught at an appropriate level and are complementary to the other courses on the degree plan. Also, individual faculty members may have degree requirements beyond those listed below; therefore, you cannot select courses for your degree plan without consulting your graduate advisory committee.

The chair of the advisory committee must be a member of the ISEN graduate faculty. The student’s advisory committee for the Master of Science degree must have at least two additional members; one member being from outside the ISEN graduate faculty. The advisory committee for the Master of Engineering degree does not require additional members. The default advisor for M.Eng. students is the Graduate Program Director, though the student may select a different chair if he/she chooses.

Master’s students should submit their degree plans at the beginning of their second semester. Since degree plans are easily changed through petitions, students should not be too concerned about some uncertainty regarding specific courses. The Office of Graduate Studies will block students from registering once they have completed 9 hours as a master’s degree student without a degree plan on file.

All ISEN master’s degrees have the following required courses: ISEN 609 (probability), ISEN 620 (optimization), and STAT 630 or 610 (statistics). Students can take ISEN 622
and ISEN 623 as a replacement for ISEN 620, and ISEN 602 as a replacement of ISEN 609. ISEN 609 and 620 represent the basic requirements to fulfill a master’s degree, while ISEN 622, 623, and 602 represent the advanced requirements. Students who intend to continue with the Ph.D. program need to take, and do well, in the advanced requirements.

ISEN 620 cannot be used together with ISEN 622/623 on a master’s degree plan. STAT 630 cannot be used together with STAT 610. But ISEN 602 can be used towards a master’s degree together with ISEN 609.

In addition to the required courses, different degree options have other requirements, as outlined below; for the complete details, please refer to the Masters’ Degrees Checklists appended to this manual.

P. Master of Science Degree

1. The Master of Science Degree - Thesis option must have at least 32 hours.
2. The Master of Science Degree – Non-thesis option must have at least 36 hours.
3. At least 24 hours must be from Industrial and Systems Engineering (ISEN).
4. In addition to STAT 630 or STAT 610, at least one more out-of-department course is required.
5. For the Master of Science Degree - Thesis option, at most six hours of combined ISEN 691 and ISEN 681 are allowed. ISEN 681 is optional, but if used, at most two hours are allowed.
6. For the Master of Science Degree – Non-thesis option, ISEN 681 cannot be used towards a degree requirement. At most three hours of ISEN 692 are allowed.
7. International students on student visas are advised to include up to two hours of ISEN 684 in a degree plan, although those hours cannot be counted towards a degree requirement. Including ISEN 684 in a degree plan is part of the requirements ISS considers when issuing a Curriculum Practical Training document.
8. The ISEN section of some cross-listed courses (ISEN 642, 644, 660) may not be offered to on-campus students. When such courses are taken as courses from the cross-listed department, they are considered as out-of-department courses.
9. If the independent study course ISEN 685 is used, a course syllabus of the material to be covered for the semester should be developed and given to the administrative coordinator for graduate programs before registering for the class. A letter grade (not an incomplete) will be assigned at the end of the semester. At most three hours of ISEN 685 can be used on a degree plan.
10. At most two non-departmental undergraduate courses at the 300 and 400 levels may be on the degree plan. Such courses must be approved by the department’s director of graduate programs and the student’s advisory committee.
11. Courses (or their equivalent) which are required for admission or ISEN undergraduate courses may not be included on the degree plan. Other courses that are considered as prerequisite material and therefore not allowed on the degree plan are MATH 304, CPSC 601, STAT 601 and STAT 651.

In addition to the departmental requirements listed above, the advisory committee may require additional courses. For information regarding the Engineering Systems Management degree plan, please see the degree plan checklist included in the appendix.

Q. Master of Engineering Degree

1. The total number of hours on the degree plan must be at least 30.
2. At least 18 hours must be from Industrial and Systems Engineering.
3. At least 9 hours must be from departments other than Industrial and Systems Engineering (STAT 630 or STAT 610 is counted as an out-of-department course).
4. ISEN 681 cannot be used towards a degree requirement.
5. ISEN 692 is allowed, up to 3 hours.
6. Students may be exempted from the final exam by submitting a petition to the OGS and obtaining their committee chair’s and departmental approval (must have a 3.0 GPR).
7. to 11. The same as those under Master of Science Degree.

In addition to the departmental requirements listed above, the advisory committee may require additional courses.

R. Final Exam - Master's Students

The final exam must be scheduled at least 10 working days prior to taking the exam. It is the student's responsibility to find an acceptable time for the exam. After a time has been agreed upon by the committee members and a meeting place determined, the student should contact the graduate program coordinator for preparation of the required OGS form. The OGS will send the Program Coordinator notification that the exam is permissible, as well as the form to report the results of the exam. It is also helpful, as a follow-up, for the student to personally remind each committee member of the exam the day before it is scheduled.

Questions during the exam may be over courses on the degree plan (including ISEN 684, 685 or 692) or over material considered prerequisite and basic for all industrial engineers. It is also acceptable for a committee to require the student to give a short presentation over his/her specific area of emphasis, in which case, the committee
members should have a report of the presentation before the day of the exam. With the graduate advisory committee’s approval, a student may petition the OGS for a waiver of the Master of Engineering Final Exam through an Office of Graduate Studies Petition.

For the thesis option, a copy of the thesis approved by the chair and in its final form should be available to the committee members two weeks prior to the examination date. We also suggest the student take the copy given to the committee members to the thesis office clerk and have a "rough draft" conference with the thesis clerk. The thesis clerk encourages such conferences, and it is helpful in avoiding problems later. The examination for the thesis option includes a formal presentation of the research and a thesis defense, as well as an examination over the course work. By committee agreement, the final exam for the thesis option may be waived if the student has an overall grade point ratio (GPR) of at least 3.5. The waiver of the final exam is requested via an Office of Graduate Studies form. If the exam is waived, a formal presentation of the thesis research is still required; however, the presentation is then in the context of a report of research results instead of an exam. A student must have a GPR of at least 3.0 over all courses (including 300 and 400 level courses) taken during his/her graduate program as well as a 3.0 over the courses on the degree plan in order to take the exam. All courses on the degree plan must have been taken within seven years of the final exam. If the student does not pass the exam, the committee may permit the student to try one more time. If the committee so recommends, the student must take the second exam before the end of the next regular semester.

If circumstances arise such that a committee member cannot attend the exam, the committee member should find another member of the graduate faculty willing to serve as a substitute. Substitutes are almost always permitted if the substitute is 1) a member of the graduate faculty, 2) there will be only one committee member absent, and 3) the absent member is not the chair.

S. From the Master's to the Ph.D.

Students in a master's program at Texas A&M University who wish to enter the Ph.D. program must submit a Letter of Intent that can be downloaded from the OGS web site located at http://ogs.tamu.edu. In addition to the Letter of Intent, the student should also submit a Statement of Purpose and ask his/her advisory committee members to write letters of recommendations. Students transferring from another department should also ask their department to send a copy of their academic file to the Industrial Engineering Graduate Programs Office. To be accepted into the Ph.D. program, the department requires students to have at least a 3.5 graduate GPR as well as positive letters of recommendation, reasonable GRE scores, and previous academic work consistent with the desire for a Ph.D. in industrial engineering.
IV. Doctoral Degrees

T. The Ph.D. Degree

The Ph.D. degree is a research-oriented degree for students interested in a career in the academic community, in a consulting field, or in an industrial or service organization interested in advanced training. The research interests of the industrial and systems engineering faculty are diverse and span the typical areas of manufacturing and production systems, operations research and applied probability, systems engineering, as well as transportation systems and applied statistics.

U. Ph.D. Course Requirements

- **Required Courses**: The following courses are required in the Ph.D. program:

  ISEN 602, ISEN 622, ISEN 623 and STAT 611.

  A student can petition the ISEN Graduate Committee to exempt all or any of the required courses if the student believes that he/she had taken the equivalent courses elsewhere and can pass the qualifying exams without taking these courses.

  In addition to the above four courses, three hours of ISEN 681 are required on a Ph.D. degree plan.

- **Advanced Courses**: At least three (3) courses on a Ph.D. degree plan should be from a set of advanced graduate courses.

  Each faculty member will have a list of graduate courses he/she (or together with other faculty who share common interests) deems as the advanced course set. A faculty member (or a group of faculty members acting together) should have his/her set of advanced courses on file with the ISEN director of graduate programs, so that the ISEN Graduate Program Office can determine that this requirement is satisfied before a Ph.D. degree plan is approved by the department.

- **Courses Not Allowed**: The following courses will not be allowed on a Ph.D. degree plan:

  All undergraduate courses, except MATH 409, 446 and 447;
  Prerequisite courses: ISEN 609, ISEN 620, CSCE 601, STAT 601 and STAT 651;
  STAT 610 or STAT 630 will be allowed, but *not* both.

V. Number of Courses Required

Students in the 96-hour Ph.D. program (B.S. to Ph.D.) can use up to 51 hours of ISEN 691 towards their degree requirement. This is equivalent to requiring at least 15 regular
courses, including three hours of ISEN 681. Requirements for students in the 64-hour Ph.D. program (Masters to Ph.D.) can use up to 31 hours of ISEN 691 towards their degree requirement. This is equivalent to requiring at least 11 regular courses, including three hours of ISEN 681.

W. Ph.D. Qualifying Exam

Industrial and systems engineering Ph.D. students are required to qualify for Ph.D. study before filing a degree plan. The purpose of the qualifying exam is to assist both the department and the student in determining whether a student can be expected to perform at a sufficiently high level in advanced course work and research to complete the requirements for the degree.

The qualifying exam is comprised of the following

- Students will take three, two-hour written exams over the following material:
  
  (1) Stochastic processes (coverage of ISEN 602);
  (2) Linear programming (coverage of ISEN 622);
  (3) Nonlinear programming (coverage of ISEN 623).

- Students must take all three written exams within one year of entering the Ph.D. program. Students can choose to either take the three written exams all at once, or take a portion of them at a given time, but finish all three written exams within a year.

- Students are generally allowed to retake the written exams they did not pass in their first attempt, except that if a student fails all three qualifying exams on their first attempt, then the Graduate Committee has the discretion to disallow a student the second attempt and thus dismiss the student from the Ph.D. program effective the next regular semester.

- Students must retake the failed written exams at the next immediate opportunity the qualifying exam is offered.

- Students need a named advisor to fully pass the qualifying exam. Students passing the written portion of the exam but without a named advisor will be given a conditional pass. Under a conditional pass, the student would have a grace period of one regular semester to identify an advisor who is willing to work with her/him (filing the degree plan is preferred to be consistent with the university rule but not required). If the student cannot find an advisor within this time frame, the student will have to appear before the Graduate Committee on a semester-by-semester basis to explain their efforts in finding an advisor. The Graduate Committee will then determine, based on the feedback from the student, whether or not the student is allowed to continue in the Ph.D. program.
X. Degree Plan

Students are expected to submit their degree plan by the first regular semester after the qualifying procedure has been satisfied. The chair of the advisory committee must be a member of the ISEN graduate faculty. A co-chair, if desired, may be from another department. The Ph.D. committee has a minimum of four graduate faculty members on the original degree plan with at least one from outside the department.

A Ph.D. degree for a student with a master’s degree requires at least 64 hours, and no courses counted for credit toward the master's degree can be included in the 64 hours. Transfer courses are acceptable on the degree plan if the advisory committee feels they aid in the academic objectives of the degree; no fixed maximum number of transfer courses has been set by the Office of Graduate Studies. At most three hours of ISEN 685 can be used in the category of regular course hours.

The Office of Graduate Studies will place a registration block on Ph.D. students after 36 hours have been completed if no degree plan has been filed.

Y. Preliminary Exam - Ph.D. Students

The preliminary exam may be scheduled when there are no more than six hours of course work remaining on the degree plan (excluding 681, 684, 691 courses). Students must complete the preliminary exam no later than the end of the semester after completion of all the course work on the degree plan. The Office of Graduate Studies must receive the results of the preliminary examination at least 14 weeks prior to the final exam date.

The exam consists of a written portion given by each member of the advisory committee (members may waive the written portion) and an oral portion. The student should contact the graduate program coordinator (ETB 4060) to process the necessary paperwork for the exam. A form needs to be signed by the committee chair and the director of graduate programs when fixing the schedule, and a memo will be prepared formally notifying the committee of the dates and times for the exam. Between the time that the first written exam is scheduled and the time of the oral exam should not exceed 15 working days. It is also helpful, as a follow-up, for the student to remind each committee member about the exam the day before it is scheduled.

A student must have a GPR of at least 3.0 over all courses (including 300 and 400 level courses) taken during his/her graduate program as well as a 3.0 over the courses on the degree plan in order to take the exam. All requirements for the Ph.D. must be completed within four years of the exam, or the preliminary exam will have to be retaken. (This four-year limit is measured from the time when the preliminary exam is passed to the time when the thesis clerk in the library approves the dissertation.)
There are three possible outcomes:

(1) the student passes,
(2) the student passes but some additional requirements are added to the student's program to overcome a weakness uncovered during the exam, or
(3) the student fails.

If the exam is failed, it can be repeated one time, with the graduate committee’s recommendation. All portions of the written exam must be passed before the oral exam is administered.

If circumstances arise where a committee member cannot attend the exam, the committee member should find another graduate faculty member willing to serve as a substitute. Substitutes are almost always permitted as long as there will be only one committee member absent, and the member absent is not the chair.

Z. The Proposal Presentation - Ph.D. Students

The industrial and systems engineering department requires a formal presentation of the proposal. The proposal presentation can take place after the student has passed the preliminary exam. But at the discretion of a student’s advisory committee, students can take the oral portion of the preliminary exam and proposal presentation at the same time. The proposal presentation serves three functions: (1) it helps to educate the student in the art of making professional presentations; (2) it provides an opportunity for the committee to determine if the student has enough knowledge to pursue research in the proposed subject area; and (3) it allows the committee to pass judgment on the suitability of the proposed research as a dissertation topic.

If the proposal presentation takes place after a student has passed his/her preliminary exam, the non-departmental members of the committee are not required to attend the proposal presentation, but they should be invited. Under all circumstances, all committee members must sign the proposal before it goes to the Office of Graduate Studies. The approved proposal must be submitted to the Office of Graduate Studies at least 15 working days prior to the submission of the Request for the Final Examination.

The content of the proposal that is submitted to the OGS should not exceed ten pages. The cover sheet and guidelines for the proposal may be obtained from the web site at http://ogs.tamu.edu.

AA. Publication of Research

Work leading to the Ph.D. is designed to give the candidate thorough and
comprehensive knowledge of the chosen professional field and training in research methods. With the help of the student's advisory committee, the student must prepare a paper for submission to a professional journal before being considered to have finished the degree requirements. In addition to successfully completing the degree plan coursework, students are expected to present their dissertation research in an ISEN 681 seminar, INFORMS student chapter seminar, or at a national conference. The student must also submit a research manuscript to a refereed journal before graduating. The student’s seminar should be scheduled before the final defense is scheduled.

BB. Final Exam - Ph.D. Students

The final exam for a Ph.D. student includes an open (public) presentation of research results and a closed examination of the dissertation. The final exam needs to be scheduled and copies of the dissertation -- approved by the chair -- must be provided to the committee at least two weeks before the exam. The copies of the dissertation given to the committee should be the final form. It is also a good practice to keep the committee informed of your research progress so that guidance is provided continually instead of as a surprise during the final exam. We also suggested that the student take a copy of the dissertation given to the committee to the thesis office in the library and have a "rough draft conference" with the thesis clerk. The thesis clerk encourages such conferences, and it is usually very helpful in avoiding later problems. It is the student's responsibility to find an acceptable time for the committee to meet. After a time has been agreed upon by the committee members and a meeting place determined, the student should contact the ISEN Graduate Programs Office for preparation of the final examination paperwork. The graduate program coordinator will also prepare an announcement for the public presentation. The OGS will send the graduate program coordinator notification that the exam is permissible and will include the form that must be returned after the exam. Since the final exam includes the formal public presentation of the dissertation research, it must be publicized throughout the department. It is also helpful, as a follow-up, for the student to remind each committee member about the exam the day before it is scheduled.

The final exam usually lasts two hours. It is the chair's responsibility to encourage questions and ensure that the presentation is conducted in a professional manner. A common practice is for the chair to introduce the topic and the student as would be done at a professional conference. It is also a good practice for the student to prepare a presentation that lasts no more than 30 to 40 minutes to allow time for questions. After the presentation, the committee meets in private with the student for the dissertation defense.

A student must have a GPR of at least 3.0 over all courses (including 300 and 400-level courses) taken during his/her graduate program as well as a 3.0 in the courses on the degree plan in order to take the exam. All courses on the degree plan must have been
taken within 10 years of the final exam. Also, the dissertation must be accepted by the thesis clerk in the library within one year of passing the final exam.

If circumstances arise such that a committee member cannot attend the exam, the committee member should find another graduate faculty member willing to serve as a substitute. Such requests are almost always permitted as long as there will be only one committee member absent and the member absent is not the chair.

**Outline of Ph.D. Study Timetable**

<table>
<thead>
<tr>
<th>Entrance of the program</th>
<th>Qualifying exam</th>
<th>Filing a degree plan</th>
<th>Preliminary exam</th>
<th>Proposal</th>
<th>Final exam (dissertation defense)</th>
</tr>
</thead>
<tbody>
<tr>
<td>within 1 year</td>
<td>After qualifying exam, and at least 90 days prior to preliminary exam. Students will be blocked from registration if a degree plan is not on file once they have completed 36 hours.</td>
<td></td>
<td>Within 6 hours of coursework remaining on degree plan</td>
<td>Can take place the same time as the preliminary exam</td>
<td>at least 15 working days at least 14 weeks</td>
</tr>
</tbody>
</table>

**CC. Doctor of Engineering Program**

Students who prefer an industry-oriented doctoral degree, instead of a research oriented degree, should consider the D.Eng. program which is administered through the Office of the College of Engineering. Students interested in the D.Eng. degree must be admitted first into a Ph.D. program and find a faculty member who will direct their committee. Students who fail the departmental qualifying exam are not eligible to transfer into the D.Eng. program. Information describing the Doctor of Engineering Degree can be obtained from the Engineering Academic and Student Affairs Office in room 129 Zachry.

**DD. Interdisciplinary Ph.D.**

The Doctor of Philosophy (Ph.D.) degree in Interdisciplinary Engineering (ITDE) was created to accommodate outstanding engineering students whose research interests cross engineering disciplines and/or college lines. Examples of previously awarded interdisciplinary topics include environmental engineering and public policy; and engineering and education.

A student applying to the Ph.D. program in ITDE must be a current Ph.D. student in a department within the Dwight Look College of Engineering. The ITDE program is administratively housed in the Dwight Look College of Engineering (CLEN) under the
leadership of the associate dean. Program information describing the Interdisciplinary Ph.D. Degree can be obtained from the Engineering Academic and Student Affairs Office in the Zachry building, room 129.

V. FINANCIAL ASSISTANCE

There are four types of financial aid available to graduate students in industrial and systems engineering: fellowships, departmental assistantships, faculty research assistantships, and scholarships. To receive financial aid, students must be enrolled as full-time students. Faculty research assistantships are under the control of faculty members who have obtained research grants. The other three forms of financial aid are initiated within the department and are highly competitive and based primarily on the student's academic credentials. Departmental assistantships are only available to industrial and systems engineering graduate students.

The primary indicators for the financial aid consideration of prospective students are the selection of previous courses taken and their associated grades, the reputation of the school, previous research work, the ability to help the department with its academic responsibilities, and letters of recommendation with strong preference given to students in the Ph.D. program. The GRE-verbal and TOEFL scores are also used as primary indicators of English language proficiency for a student who is a graduate of a foreign institution of higher education. Other scores from the GRE tests may be used as secondary indicators. Nominations for college and university fellowships are made using the same measures.

EE. Fellowships

The university and college offer several types of fellowships, and nominations of all qualified students are made automatically by the department. Fellowships are the most prestigious of the various forms of financial aid. Fellowships are primarily designed as a recruiting tool and are usually available only to new students.

FF. Scholarships

The department has a limited number of $1000 per year scholarships given to qualified students. (These scholarships also include a waiver of out-of-state fees for the academic year so the recipients pay only in-state tuition and fees.) As with other forms of financial aid, they are awarded on a competitive basis according to the academic credentials of the students. The scholarships are given for one academic year only and are extended based on the same competitive basis as the original award.
GG. **Assistantships**

Graduate assistantship positions require an average of 20 hours of work per week. Since most departmental assistantships are given to new students, the actual assignments are not made until the first day of classes and are based on the department’s academic needs. Thus, when a student receives an offer of a departmental assistantship, it is usually not known whether it is for teaching, non-teaching, or research until the beginning of the semester. When the assignment for the semester is made, the student will be assigned to work under the supervision of a faculty member. During the first week after assignments have been made, the student should make an appointment with his/her faculty supervisor to determine the semester's work schedule. Since the assistantship is provided to the student for work to be performed, in some instances, the project work may not relate to the student's research topic; thus, a graduate assistant must fully understand his/her dual role as a student and as an employee.

The university has a policy that a student with teaching responsibilities must attend an all-day teaching workshop conducted by the University Center for Teaching Excellence. Students may be asked to attend this workshop in preparation for future assignment possibilities. In addition, state law requires that a student whose native language is not English must be certified in English proficiency before being assigned any teaching function (certification is discussed in the “English Language Proficiency” section).

HH. **Evaluation of Graduate Assistants**

At the end of each semester, the performance of all graduate students supported by departmental funds (both research and teaching assistants) will be evaluated.

For teaching assistants, this evaluation may consist of:

1. Student evaluation forms, if appropriate (e.g. for TAs with lab sections).
2. An assessment of work performance by the student’s supervisor.
3. An assessment of the student’s academic progress by the chair of the student’s degree committee (if applicable) or by the Graduate Program Director (if the student has not yet filed a degree plan).

For research assistants, the evaluation is primarily based on an assessment of academic progress by the student’s academic supervisor. If the student’s academic progress or the performance on his/her assigned tasks is deemed inadequate, the *graduate program director* may recommend that departmental funding be discontinued.
II. Insurance and Benefits

Students with a departmental assistantship or a faculty research assistantship which requires 20 hours per week are considered half-time employees. As such, they are entitled to medical insurance benefits, and the university contributes towards the insurance after the first 90 days has elapsed. Students should contact the departmental business administrator (Room 4021/4022 ETB) to enroll in the insurance program. All students are required to have some form of health insurance coverage, and, depending on visa status, may be required to provide proof of coverage for all dependents.

VI. MISCELLANEOUS POLICIES

JJ. Policy Regarding ISEN 681

ISEN 681 is a one-hour seminar course in which guests give presentations about topics of professional interest to industrial engineers. There are usually guests from outside the university making presentations each semester as well as many of the department faculty. Ph.D. students also present their research, usually during their final semester; thus, the seminar is an excellent means for other students to keep abreast of the research activities with Industrial Engineering. The seminar series is meant to be used by M.S. Thesis students and Ph.D. students as an avenue to familiarize them with research; therefore, Ph.D. students are required to register for the seminar for at least three semesters. M.S. students are encouraged to register but not required. The M.Eng. program is not intended as a research degree and, therefore, seminars will not be counted for that degree. Thus, students that are admitted to the M.S. program and subsequently file a M.Eng. degree plan will not be allowed to use the 681 hours that they have accrued. (Note that B.S. to Ph.D. students that file a M.Eng. degree plan to receive a Master’s degree during the extended Ph.D. process will apply their seminar credits to the Ph.D. degree and not use them during the M.Eng. process.)

KK. Policy Regarding ISEN 684

ISEN 684 is an industrial internship allowing graduate students to apply their course work to an industrial problem. When students are on an internship, there must be an academic component to their work assignment that has been discussed with their advisor before registering for the course. At the end of the course, the student will deliver a written final report describing his/her experience, activities, and findings. The report should be similar in style and content to an internal company project report, and a grade of “S” or “U” will be given. A student may combine ISEN 684 and ISEN 692 or ISEN 691 hours at the discretion of the student’s committee and use the 692 or 691 hours to finish on campus a project started in industry. At the discretion of the advisor, an incomplete grade (“I”) may be given for the 684 until after the 692 project or 691
research is complete. The continuous registration requirement applies to ISEN 684 as well as to ISEN 691 and 692.

LL. **Policy Regarding ISEN 685**

ISEN 685 is a directed-study course designed to cover special topics not within the scope and format of thesis research or covered by another formal course currently offered in the curriculum. Therefore, the student must submit to the ISEN director of graduate programs a syllabus approved by the directing faculty member before enrolling in ISEN 685. The syllabus should provide a detailed description of the topic, list the resource material(s) to be used, identify the course deliverables, outline the method of evaluation, and list the number of credit hours assigned. At the end of the semester, a letter grade (i.e., other than S/U) should be assigned. A grade of I is appropriate only for medical reasons or for similar unforeseen circumstances. Depending on the topic chosen, it may not be appropriate for a student to take all planned credits in the same semester. In such cases, the total number of planned credits can be staged over more than one semester.

MM. **Policy Regarding ISEN 691**

ISEN 691 is used for faculty-directed research leading to a thesis or dissertation and may not be used by students in the Master's of Science Non-thesis or Master of Engineering degree programs. The number of hours taken each semester should be proportional to the level of faculty and institutional support. Exceptions to this policy are (1) the student registers in absentia (i.e., the student is living outside of the College Station/Bryan area and will not be using university facilities), and (2) the student's final exam has already been scheduled for the first month of the semester. Note that grades of “I” may be carried over until the final exam, and the final grade is either an “S” or “U.” Also, the university's continuous registration policy requires that if the coursework on the degree plan is complete except for ISEN 691, the student must be registered each regular semester until graduation.

NN. **Policy Regarding ISEN 692**

ISEN 692 is used for faculty-directed research and/or project work for a non-thesis degree. At the end of the course, the student will submit a written report covering the research and project work. The report should be similar in style (but not necessarily content) to a thesis. The number of hours taken each semester should be proportional to the level of faculty and institutional support. Exceptions to this policy are (1) the student registers in absentia (i.e., the student is living outside of the College Station/Bryan area and will not be using university facilities), and (2) the student's final exam has already been scheduled for the first month of the semester. Note that grades of I may be carried over until the final exam, and the final grade is either an S or U.
Also, the university’s continuous registration policy requires that if the course work on the degree plan is complete except for ISEN 692, the student must be registered each regular semester until graduation.

OO. Q-Drop Policy

At most one Q-drop is allowed for students in the master’s program, and at most one Q-drop is allowed for students in the Ph.D. program, with the following exceptions:

1. Q-drops before the 12th class day of a regular semester or 4th class day for the summer are not considered as part of the limit. (This is 12 days into the semester, not 12 days of the course.)
2. If a degree plan has been filed before the semester starts, Q-drops for courses not on the degree plan will not count against the limit if the advisory committee chair requests the exception.
3. Q-drops for other extenuating circumstances will be considered on a case-by-case basis.

PP. Probation For Graduate Students

A student in the Ph.D. program is placed on probation when his/her cumulative GPR is below 3.0. If a student on probation has a semester with a semester GPR lower than 3.0, then he/she will be removed from our Ph.D. program.

Students in the master’s programs are subject to periodic reviews by the *ISEN Graduate Committee*. Students will be placed on probation, and could be subsequently removed from our graduate programs, if the Graduate Committee does not believe that the student has a reasonable chance of graduating from our program with a degree.
APPENDIX

To help in filling out a degree plan, checklists have been designed by which students can verify that departmental requirements have been satisfied. Copies of the checklists are located on the department's web page (http://ise.tamu.edu/academics.htm) and in the ISEN Graduate Program Office.
Master of Engineering Degree Checklist

Instructions: The purpose of this checklist is to help you insure that your degree plan satisfies university and departmental policies. However, you cannot design your degree plan without explicit help from an advisor, since each faculty member will have requirements beyond these minimal departmental requirements. To be eligible for the Master of Engineering Degree, you must have an undergraduate degree in an engineering discipline. Additional university requirements can be found through the OGS website.

A. Must have courses satisfying the following conditions:
   (i) STAT 630 ___ or STAT 610 ___ (but not both)
   (ii) ISEN 620 ___ or both (ISEN 622 ___ and ISEN 623 ___)
   (iii) ISEN 609 ___ and/or ISEN 602 ___

B. Project Option: ISEN 692 ______
   (not required, but if used, 3 hours maximum)

C. Systems Engineering Option (additional required courses):
   
   ISEN 627 _____ or ISEN 669 ______
   ISEN 640 ______

D. Additional departmental courses: (the number of hours in ISEN courses from the combined lists of parts A, B, C, and D must be at least 18 hours)

   ISEN ____________
   ISEN ____________
   ISEN ____________
   ISEN ____________

E. Industrial internship: ISEN 684 (1 hr per semester, 2 hrs maximum) ______
   (not required, but if used, does not count towards the 18 hours of part D nor towards the minimum degree requirements of 30 hours)

F. Out-of-department courses: (at least two and no more than three in addition to the STAT course of Part A)
   
   _________  _________  _________  _________

Notes:
1. A non-thesis degree (691 hours not allowed) requiring at least 30 hours.
2. No prerequisites on degree plan (e.g., MATH 304, STAT 601, CPSC 601, STAT 651).
3. No ISEN undergraduate courses may be on degree plan.
4. At most two undergraduate courses at the 300- or 400-level (these must be pre-approved).
5. ISEN 620 may not be used with ISEN 622 or ISEN 623.
6. ISEN 681 may not be on a M.Eng. degree plan.
7. The ISEN section of some cross-listed courses is not offered to on-campus students. Such courses (ISEN 642, 644, 660) are taken as courses from the cross-listed department and are considered as out-of-department courses.
8. At most, 3 hours of ISEN 685 may be used on the degree plan.
Master of Science Degree Checklist – Industrial Engineering

**Instructions:** The purpose of this checklist is to help you insure that your degree plan satisfies university and departmental policies. However, you cannot design your degree plan without explicit help from an advisor, since each faculty member will have requirements beyond these minimal departmental requirements. Additional university requirements can be found through the OGS website.

A. Must have courses satisfying the following conditions:
   (i) STAT 610 ___ or STAT 630 ________ (but not both)
   (ii) ISEN 620 ___ or both (ISEN 622 ___ and ISEN 623 ___)
   (iii) ISEN 609 ___ and/or ISEN 602 ______

B. Thesis Option: ISEN 691 ______ ISEN 681 (2 hrs max) ________
   (ISEN 681 is optional, and combined ISEN 681 and 691 cannot exceed 6 hours)
   Thesis proposal required.

C. Non-thesis Option: ISEN 692 ______
   (ISEN 692 is optional with a maximum of 3 hrs. ISEN 681 cannot be used on a degree plan)

D. Systems Engineering Option (additional required courses):
   ISEN 627 _____ or ISEN 669 _____
   ISEN 640 _____

E. Additional departmental courses: (the number of hours in ISEN courses from the combined lists of parts A, B, C, D, E, and F must be at least 24 hours)
   ISEN ___________ ISEN _______ ISEN _______ ISEN _______
   ISEN ___________ ISEN _______ ISEN _______ ISEN _______

F. Industrial internship: ISEN 684 (1 hr per semester, 2 hrs maximum) ________
   (not required, but if used, does not count towards the 24 hours of part F nor towards the minimum degree requirements of 32 or 36 hours)

G. Out-of-department courses: (at least one in addition to STAT 610 or STAT 630 above)
   ___________ ___________ ___________ ___________ ___________

**Notes:**
1. Thesis option: at least 32 hours
2. Non-thesis option: at least 36 hours
3. No prerequisites on degree plan (e.g., MATH 304, STAT 601, CPSC 601, STAT 651)
4. No ISEN undergraduate courses may be on degree plan
5. At most two undergraduate courses at the 300 or 400 level may be used
   (these must be pre-approved by the Committee Chair or the ISEN Graduate Advisor)
6. ISEN 620 may not be used with ISEN 622 or ISEN 623
7. The ISEN section of some cross-listed courses is not offered to on-campus students. Such courses (ISEN 642, 644, 660) are taken as courses from the cross-listed department and are considered as out-of-department courses.
8. At most, 3 hours of ISEN 685 may be used toward the degree plan
Master of Science Degree Checklist – Engineering Systems Management

Instructions: The purpose of this checklist is to help you insure that your degree plan satisfies university and departmental policies. However, you cannot design your degree plan without explicit help from an advisor, since each faculty member will have requirements beyond these minimal departmental requirements. Additional university requirements can be found through the OGS website.

A. Must have courses satisfying the following conditions:
   (i) STAT 630 ___ or STAT 610 ________ (but not both)
   (ii) ISEN 620 ___
   (iii) ISEN 609 ___
   (iv) ISEN 608 ___
   (v) ISEN 625 ___
   (vi) ISEN 663 ___
   (vii) ISEN 667 ___
   (viii) ISEN 669 ___

B. Additional departmental courses: (the number of hours in ISEN courses, not including STAT 630/610, from the combined lists of parts A and B must be between 24-27 hours)
  
ISEN ____________  ISEN ________  ISEN ________  ISEN ________

C. Out-of-department courses: (between 9-12 hours, including STAT 610 or STAT 630 above).
   FINC 635 and SENG 660 are recommended.

   ____________  ____________  ____________  ____________

D. Industrial internship: ISEN 684 (1 hr per semester, 2 hrs maximum) ______
   (not required, but if used, does not count towards the requirements of 36 hours)

Notes: 1. A non-thesis degree (691 hours not allowed) requiring at least 36 hours.
2. No prerequisites on degree plan (e.g., MATH 304, STAT 601, CPSC 601, STAT 651).
3. No ISEN undergraduate courses may be on degree plan.
4. At most two undergraduate courses at the 300- or 400-level (these must be pre-approved).
5. ISEN 620 may not be used with ISEN 622 or ISEN 623.
6. ISEN 681 may not be on a M.Eng. degree plan.
7. The ISEN section of some cross-listed courses is not offered to on-campus students. Such courses (ISEN 642, 644, 660) are taken as courses from the cross-listed department and are considered as out-of-department courses.
8. At most, 3 hours of ISEN 685 may be used on the degree plan
Ph.D. Degree Checklist

Instructions: The purpose of this checklist is to summarize the department's Ph.D. requirements. However, you cannot design your degree plan without explicit help from an advisor, since each faculty member will have requirements beyond the minimal departmental and area requirements.

University Requirements

The total must be at least 64 hours beyond the Masters or 96 hours beyond the Bachelors. Additional university requirements can be found through the OGS website.

Department Requirements

A. Course requirements

Required courses: ISEN 602 ______ ISEN 622 ______ ISEN 623 ______ STAT 611 ______

Advanced courses (at least three):

B. Qualifying procedure. Students will take three two-hour exams over the following material. A student will only be given a conditional pass without a named faculty advisor.

   (1) Stochastic Processes (coverage of ISEN 602)
   (2) Linear Optimization (coverage of ISEN 622)
   (3) Nonlinear Optimization (coverage of ISEN 623)

C. ISEN 681 Seminar (three hours)

D. ISEN 691 (at most 31 hours for 64-hour degree plan, at most 51 hours for 96-hour degree plan.)
(No more than 3 hours per regular semester may be taken before a student passes the qualifying exams, or these hours must be pre-approved by the Departmental Graduate Committee.)

E. Industrial internship: ISEN 684 (1 hr per semester, 3 hrs maximum)
(not required, but if used, does not count towards the minimum required 64 or 96 hours)

F. Students must take their Preliminary Exam by the end of the semester following the one in which they get within six hours of completing their degree plan course hours.

G. Submit dissertation proposal.

H. (Optional) Presentation of research results during a 681 Seminar, Student Society Seminar (such as INFORMS), or a national conference, and submission of papers to a refereed journal.

Faculty Requirements

Talk to each committee member before submitting a degree plan.

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Note: The following courses will not be allowed on a Ph.D. degree plan: all undergraduate courses except MATH 409, 446 and 447; and the following prerequisite courses ISEN 609, 620, CSCE 601, STAT 601 and STAT 651. STAT 610 or 630 will be allowed, but not both. At most, 3 hours of ISEN 685 may be used towards the degree plan.