Graduate Student Handbook

Created September 16, 2010

Welcome, Graduate students!

The Department of Industrial & Systems Engineering at the University of Wisconsin-Madison welcomes you!

We are pleased that you have joined us for your graduate studies! Our department is internationally known for expertise in human factors engineering, health systems engineering, manufacturing and production systems, decision sciences & operations research, and quality engineering.

Graduate school is a remarkable time in an engineer's life. Graduate school provides an opportunity for you to deepen your skills and expand your knowledge about industrial engineering and where it can be applied to improve industry and society. You're becoming part of a great graduate school at a great University and I am confident that you will find lots of growth here. The faculty, staff and your fellow students are here to help you learn what you want to learn!

Graduate school is a time of self-directed learning – both inside and outside the classroom. Take advantage of your time here to meet the faculty across the whole department, to attend our research seminars on Friday afternoon, to look into the work of other departments and to create a learning experience that will launch your career.

Your first stop on the way is with the Student Services Office – Anne Duchek is responsible for assisting graduate students – if she doesn't know an answer, she does know who DOES know the answer! Shiyu Zhou, PhD, is Associate Chair for Graduate Studies; he can assist you with programmatic issues. Each graduate student has an advisor – please make sure to introduce yourself to your advisor before the 3rd week of the semester.

As Chair, I have drop-in office hours on Wednesday morning from 9-10 in room 3270 Mechanical Engineering – stop by to say Hi!

Good luck,

Patricia Flatley Brennan, RN, PhD, FAAN
Professor and Chair

Department of Industrial & Systems Engineering

University of Wisconsin-Madison 3270 Mechanical Engineering Building 1513 University Ave. Madison, WI 53706-1609
608/262-2686 Fax: 608/262-8454 Email: ie@engr.wisc.edu http://www.engr.wisc.edu/ie/

Table of Contents

Introduction to the Department of Industrial and Systems Engineering

Patricia Brennan, Professor and Chair of ISyE Department

pbrennan@ie.engr.wisc.edu
Office: 3270A Mechanical Engineering
Phone: (608) 263-1315

Shiyu Zhou, Associate Professor and Associate Chair of Graduate Affairs

szhou@engr.wisc.edu
Office: 3254 Mechanical Engineering
Phone: (608) 262-9534
(Qualifying Exams, Graduate Admissions, Graduate Program Development)

Carol Anne Krueger, Department Administrator

cakrueger@engr.wisc.edu
Office: 3246 Mechanical Engineering
Phone: (608) 262-9660
(Administrative Management, Policy and Budget Development, Public Relations, Communications, and Special Events Management)

Annie Duchek – Graduate Student Services Coordinator for ISyE

amduchek@engr.wisc.edu
Office: 3182 Mechanical Engineering Building
Phone: (608) 890-2765
(Course Enrollment, Satisfactory Progress, Graduate Admissions, Graduation)

Pam Peterson – North Student Services HUB Supervisor

prpeters@engr.wisc.edu
Office: 3182 Mechanical Engineering Building
Phone: (608) 263-4025
(Course Evaluations, Undergraduate Advising, ISyE Timetable, Graduate Back-up)

Denise Roberts, Financial Specialist

derobert@wisc.edu
Office: 3270B Mechanical Engineering Building
Phone: (608) 265-4664
(Purchasing, Expense Reimbursement, Travel, Research Administration & Accounts)

Lisa Tesch – Payroll & Benefits Specialist

ltesch@wisc.edu
Office 3180 Mechanical Engineering Building
Phone: (608) 890-3851
(RA/TA/PA Salary and Benefits, HR Inquires)

Student Life

Housing

There are many different housing options in Madison. The key to finding a good fit is to start looking for housing early. You can start your search on the internet on the Campus Information and Visitor Center (CIVC) website at **http://housing.civc.wisc.edu/** . They have updated housing listings as well as information about tenants' rights, university apartments, and finding housing in Madison. You may also want to try **http://www.cdliving.com**, as they list many campus area apartments. Almost all leases are 12 months long and start on August 15th.
If you have any questions or concerns with your housing, please call the Tenant Resource Center at (608) 257-0006 or visit their website at **http://www.tenantresourcecenter.org/**

Student ID/Wiscard

All students need a Student ID card. With this card, students can check out books from any of the Campus Libraries and it can also be used as a multipurpose debit card called "Wiscard." Students' Wiscard can be used to purchase food, textbooks, and school supplies around campus.

Obtaining a Student ID

Newly admitted students may obtain their initial card at no cost upon verification of enrollment by the card office staff. Continuing or returning students may obtain a card to replace a lost, stolen, or worn ID as needed. Replacement cards may be subject to a fee. In order to obtain your student ID you must present some form of personal photo identification such as a valid driver's license, passport, or state ID. The Photo ID Office is located in Memorial Union in room 4316 and the hours are Monday-Friday 8:00am- 4:15pm. You can find more information at **http://www.wiscard.wisc.edu/service.html**.

Bus Pass

The ASM bus pass is free (already included in your tuition and fees) and includes unlimited rides on the Madison Metro, the local bus and paratransit agency. Bus passes are available at the beginning of each semester at various locations. There are five campus bus routes that run frequently throughout the week and anyone can ride these buses *without* a bus pass. Routes 80, 84 and 85 run during the daytime hours and routes 80, 81, and 82 run during nighttime hours. Routes 85 and 82 run close to the Engineering Campus. You can find a complete map of all bus routes, as well as schedules at **http://www2.fpm.wisc.edu/trans/alt_transit.asp#bus**.

City of Madison

The city of Madison has a lot to offer its residents and visitors with hundreds of restaurants, musical events and cultural activities. The websites below will help you learn more about the city and things to do year round.
Visit Madison: http://www.visitmadison.com/
Isthmus Daily Page: http://www.thedailypage.com/theguide/
UW-Madison Events Calendar: http://www.today.wisc.edu/
Madison.com: http://host.madison.com/

Academics

Important Websites

ISyE Department Website	http://www.engr.wisc.edu/ie/
Wendt Library	http://wendt.library.wisc.edu/
International Student Services	http://www.intstudents.wisc.edu/
COE Diversity Affairs Office	http://studentservices.engr.wisc.edu/diversity/
Engineering Career Services	https://ecs.engr.wisc.edu/public/
DoIT (Division of Info Tech)	http://www.doit.wisc.edu/students/
CAE (Computer Aided Eng)	http://www.cae.wisc.edu/
OWLS Wait List System	https://admin.engr.wisc.edu/wait_list/manage_menu.php
Deadlines At a Glance	http://registrar.wisc.edu/fall_deadlines_at_a_glance.htm
Academic Calendar	http://www.secfac.wisc.edu/acadcal/
University Health Services	http://www.uhs.wisc.edu/
McBurney Disability Center	http://www.mcburney.wisc.edu/
Writing Center	http://writing.wisc.edu/
Grad School Academic Guidelines	http://www.grad.wisc.edu/education/acadpolicy/index.html
Graduate School Forms	http://www.grad.wisc.edu/education/forms/index.html

Important Dates

Each semester, you can find a copy of the Academic Calendar, as well as important deadlines (Deadlines At A Glance) through the wisc.edu homepage. The Student Services Office will e-mail students at the beginning of each semester to remind students of the deadlines. **However, as a student, it is YOUR responsibility to be aware of and meet all deadlines.**

The Academic Calendar can be found at: http://www.secfac.wisc.edu/acadcal/

You can find each semester's deadlines at the Registrar's Deadlines At A Glance web page: http://registrar.wisc.edu/fall_deadlines_at_a_glance.htm

Advising

Per Graduate School policy, every graduate student must have a faculty advisor. A faculty advisor provides the graduate student with academic guidance regarding their course selection and research oversight in their thesis or project. Graduate students should always seek advice from their advisor and other faculty in their interest area prior to enrolling for courses.

Faculty Advisor Selection

When graduate students are admitted to the ISyE department, their advisor is either a) the faculty person providing financial support b) the faculty who recommended their admission or c) a faculty is assigned to them by the Graduate Student Coordinator. Advisors are assigned according to a student's chosen Focus Area.

Changing Focus Areas

Changing focus areas during the graduate program may be necessary due to changes in a student's interests. First, students should understand that switching focus areas may result in the student having to take more courses to meet the requirements of their new focus area. Second, in order to change focus areas, students need to secure a new faculty advisor within the new focus area. It is the student's responsibility to find a new advisor before they can change focus areas. Once a student has secured a faculty advisor in their new focus area, the student should request that the advisor e-

mail the Graduate Student Coordinator to confirm their willingness to advise the student. The Graduate Student Coordinator will then update the student's focus area and advisor.

Changing Faculty Advisors

Changing advisors during the graduate program may be necessary due to changes in a student's interests or changes in the funding sources for their support. Students should discuss an advisor change with the faculty in their interest area and request a change of advisor with the ISyE Graduate Coordinator in room 3182 ME Bldg.

Changing Degree Levels

It may become necessary for some students to change their degree level. Some students who begin working toward a PhD may decide to only pursue an MS degree. Conversely, some students who plan to complete only a MS degree may be interested in continuing on for a PhD.
In the latter case, the student must first secure a faculty advisor who agrees to advise them throughout their PhD program. Once a student has secured a faculty advisor, the faculty should send an e-mail to the Graduate Student Coordinator to notify them of their intent to advise the student. Their student file is then reviewed by the Chair of the Graduate Affairs to ensure they are prepared for the PhD program and have been making satisfactory progress. *The decision to continue on for a PhD must be made with the support of the faculty advisor and the Chair of the Graduate Affairs.* Once the student's change of degree level is approved, the Graduate Student Coordinator will notify the Graduate School.
**** Please note that all International Students must also inform the International Student Services Office as soon as they decide to change their degree level.****

Registering for Independent Study, Research or Thesis Credits

To register for independent study or research and thesis credits students must get approval from their research advisor. Students should email the Graduate Student Coordinator in the Student Services Office with their desired semester to enroll, course number (699, 790, 890 or 990), Campus ID number, and research advisor. Please remember that all requests must be made *prior* to the Add Deadline for each semester.

The Graduate Student Coordinator will then send the student an e-mail, indicating they now have permission to enroll. While student services can grant students permission to enroll in certain courses, the student must go into their Student Center and add the course. No one but the student can add, drop or change a course. At the time the student enrolls, they will then be able to select the number of credits they would like to enroll in. Graduate students typically enroll in 2-3 credits of research each semester, but this should be discussed and approved by the student's faculty advisor.

Research & Independent Study Courses: Independent study credits (699 or 999) are graded with a letter grade (A-F) and are weighted with the student's GPA. Research credits (790, 890, 990) can only be graded as P (Progress), S (Satisfactory), U (Unsatisfactory). Research credits are not weighted into a student's GPA.

As a general guideline, MS students should register for Independent Study 699 or Master's Research 790; PhD pre-dissertators should register for Independent Study 699 or Pre-dissertator Research 890; PhD dissertators should register for Advanced Independent Study 999 or Dissertator Research 990.
However, the student needs to discuss with your advisor to decide which course to register for among 699, 790, 890, or 990.

Change of credits: If a student decides they want to change the number of credits for their research or independent study course and the Add Deadline has *not* passed, they can still change the number of credits themselves. The student should log into their Student Center, select the Course Enrollment tab and then the correct semester. The student should then select the course they would like to change. At the top of the screen will be an Edit tab. When the student clicks on the Edit tab, they can then change the number of credits.

If a student decides they want to change the number of credits for their research or independent study course and the Add Deadline *has* passed, they should see the Graduate Student Coordinator. The student will have to complete a Course Change Form and attach a letter from their faculty advisor explaining why the change was not made prior to the Add

Deadline. Both of these documents should then be hand delivered or e-mailed to Alissa Ewer at the Graduate School (217 Bascom Hall).

Registering for a Closed Course

If you try to enroll for a course but receive an error message, *please read the error message carefully*. If the error message indicates that the course has reached capacity, please use the OWLS Wait List System. Please note that OWLS is only available for Engineering Courses. For courses outside of engineering, please contact the instructor to see if a waitlist is available.

If the error message indicates the course pre-requisites have not been met, please e-mail the Graduate Coordinator for permission to enroll.

If the error message indicates that instructor consent is required, please e-mail the instructor.

Grading

Per ISyE Policy IEP 11.1, graduate students who receive a grade of C or lower will not be allowed to use that course for their graduate program. Students must receive a BC or higher in any course they plan to use towards their graduate program.

Satisfactory Progress

Continuation in the Graduate School is at the discretion of a student's program, the Graduate School, and a student's faculty advisor. The Graduate School sets minimum standards that all graduate students in the university must meet. Many departments and programs have additional requirements that exceed these Graduate School minimum requirements. The definition of satisfactory progress varies by program. The *Graduate School Catalog*, grad.wisc.edu/catalog, includes the Graduate School's minimum degree requirements and each program's minimum criteria for satisfactory progress.
The Graduate School requires that students maintain a minimum graduate GPA of 3.00 in all graduate-level work (300 or above, excluding research, audit, credit/no credit, and pass/fail courses) taken as a graduate student unless probationary admission conditions require higher grades. The Graduate School also considers Incomplete (I) grades to be unsatisfactory if they are not removed during the next fall or spring semester in which a student is enrolled; however, the instructor may impose an earlier deadline.
A student may be placed on probation or suspended from the Graduate School for low grades or for failing to resolve incompletes in a timely fashion. In special cases the Graduate School permits students who do not meet these minimum standards to continue on probation upon recommendation and support of their advisor. Most programs require satisfactory progress to continue funding support.

Probation

If a student was admitted on probation and s/he satisfies the conditions outlined at the time of admission, probationary status will be removed automatically. Once their studies have begun, students are expected to make satisfactory progress toward their degree.

Students must be in good academic standing with the Graduate School, their program, and their advisor. The Graduate School regularly reviews the record of any student who received grades of BC, C, D, F, or I in graduate-level courses (300 or above), or grades of U in research and thesis. This review could result in academic probation with a hold on future enrollment, and the student may be suspended from graduate studies.

The Graduate School may also put students on probation for incompletes not cleared within one term. Dissertators will not be placed on probation for incomplete grades in research courses. All incomplete grades must be resolved before a degree is granted.

Please note that any student who is on probation will not be able to enroll for the following semester until their final grades are submitted and the Graduate School has verified they are making satisfactory progress. For any questions

relating to probation, please contact Alissa Ewer, Graduate School Student Coordinator, at (608) 265-0519 or aewer@grad.wisc.edu.

Minimum Credit Requirements

Fall & Spring: The minimum credit load to be considered a graduate student is two graduate-level credits (300 or above). A student taking 2-6 credits during the Fall or Spring semester is considered a part-time graduate student. A student taking 8-12 credits during the Fall or Spring semester is considered a full-time graduate student. The maximum credit load for fall and spring semester is 12 graduate-level credits. Students who are being paid as an RA, TA or PA must be enrolled as a full-time student.

Summer: Enrollment for summer is not required for Graduate Students. However, it is required for any student who is being paid as an RA or TA. During the summer, students who are required to enroll must take at least 2 credits.

PhD Dissertators: PhD Dissertator status, which is granted once a PhD student has passed their Preliminary Exam, allows a student to enroll for only 3 credits and be considered a full-time student. Dissertators also pay a lower tuition than other graduate students. In order to maintain dissertator status, students must enroll for no more than and no less than 3 credits each semester. For more information on dissertator status, please see the Graduate School's Academic Policies.

PLEASE NOTE that pass/fail courses, audited courses, or courses below the 300 level do not count towards minimum or maximum requirements. They are in essence counted as zero credits.

Full-time Credit Requirements

	Fall/Spring Credit Load	Summer Credit Load
General Rule	8-12 cr	4-8 cr
Dissertators	3 cr	3 cr
Non-dissertator TAs and RAs with 33%<	8 cr	2 cr
International Students	8-12 cr	not required unless being paid

Credit Overload

In order to enroll for more than the maximum credit load in any given semester, students must submit a Credit Overload Request form: **http://info.gradsch.wisc.edu/forms/overload.html** . This form must be signed by your faculty advisor and turned into the Graduate School at 217 Bascom Hall. The Graduate School will look closely at the rationale for the request, and if the request is approved, the student will be notified that they can add the course. ***This form MUST be submitted at least one week before the add deadline.***

Transferring Graduate Credits from other Institutions

The Graduate School's minimum credit requirement for graduation can ONLY be satisfied with graduate-level courses taken as a graduate student at UW-Madison. The Graduate School's minimum credit requirement for a Master's degree is 16 credits and 32 credits for a PhD. Although the ISyE Department will allow students to transfer in courses, they will not appear on their UW-Madison transcript. Graduate students who have been absent for five or more years will lose all degree credits earned before their absence.

The ISyE Department will allow Graduate Students to use up to 6 credits from a previous graduate institution towards their ISyE Graduate Program. However there are a few exceptions:

- Courses taken as an undergraduate student *cannot* be used toward the ISyE Graduate Program, except to fulfill the Breadth Requirement for PhD students.
- PhD students can transfer more than 6cr of coursework if it is approved by their advisor.

If a student would like to use credits from a previous institution, they should first discuss this with their advisor for approval. If the advisor approves, a Course Substitution Form (which can be found in 3182ME) and syllabus must be submitted to the Graduate Student Coordinator for final approval from the Chair of Graduate Affairs.

Teaching Evaluations

At the end of each semester, instructors are required to evaluate their teaching abilities through a teaching evaluation. Some departments use a paper form that is distributed in class, but the ISyE Department recently changed to Online Teaching Evaluations. These evaluations are extremely useful to the department in evaluating faculty, determining tenure, and improving the department's curriculum. Although completing these evaluations is not required, ***we strongly encourage students to complete the evaluations online.*** This is one of the most useful tools the department has to evaluate the teaching capabilities of their instructors and we rely heavily on students' feedback.

Student Resources

Counseling for Engineering Graduate Students

The College of Engineering's Counseling Service is available because it is easier to concentrate on your studies if you can deal effectively with personal, academic and career concerns. Talking with someone who is objective and empathetic can help you sort through these concerns.
Appointments can be made with the COE counselor, David Lacocque by telephoning him (608/265-5600), emailing (lacocque@uhs.wisc.edu), or calling or stopping by the office at 333 East Campus Mall, Madison, WI 53715, Phone: (608) 265-5480. Please see http://studentservices.engr.wisc.edu/counseling/ for more information

Engineering Career Services (ECS), Office of Student Development

Engineering Career Services (https://ecs.engr.wisc.edu/public/index.php) provides lifetime tools for successful career development in a rapidly changing world. ECS helps students in preparing for internship/co-op as well as job searches (resume & cover letter writing, listing of potential employers, etc), practicing interviewing skills (mock interviews, sample interview questions), and other important career information such as negotiating job offers and salaries. Students can become lifetime members of ECS by registering and paying a one-time $20 fee.

The staff at ECS teaches a course called Career Orientation (listed as PRO OR 200 under Professional Orientation). The course generally meets one time per week and is worth one credit. Students gain exposure to the world of work and valuable knowledge and skills related to the job search.

Contact Person: John Archambault
Telephone: (608) 262-3471
Location: M1002 Engineering Centers Building

Cooperative Education

Obtaining work experience prior to completing your degree requirements typically increases employment opportunities and starting salaries at graduation. Most UW engineering co-ops work full-time in an engineering position from Jan. - Aug. or May - Dec. The co-op provides a solid eight to twelve months of paid engineering work experience. Alternating assignments are also an option.

Cooperative education is an academic option as part of your engineering education. Students who participate complete assignments and receive academic credit toward graduation. While on co-ops, students are considered full-time students and are eligible to maintain family or UW health insurance. Compensation is competitive averaging $15/hr.

The advantage of a co-op over an internship is the increased level of responsibility received due to the longer duration of the work term. Co-ops are able to work on larger and complex projects that require more time to complete.
Please go to https://ecs.engr.wisc.edu/public/student/Co-opInternFAQundergrad.pdf and see the FAQ section for answers to common questions. The co-op credit applies toward graduation requirements differently in each department. See how your credit(s) can apply.

Summer Internships
The Summer Internship is for students seeking engineering employment during the summer months. These 12-14 week assignments provide students exposure to engineering while enabling the employer to fill short-term project needs.

For detailed information on the Cooperative Education or Summer Internship programs, please contact John Archambault in the Engineering Career Services Office (M1002 Engineering Centers).

Office for Equity and Diversity (OED)

The Office for Equity and Diversity (OED), promotes, integrates, and transfers equity and diversity principles to nurture human resources and advance the mission of the University of Wisconsin-Madison (university). The OED employs multiple approaches to attain its strategic objectives. These include:

- provide leadership and consultation to develop and implement equity and diversity strategies throughout the campus;
- promoting the use of standardized and proactive human resources processes;
- maximizing human resources through the effective use of continuous improvement principles;
- establishing collaborative partnerships with Schools/Colleges and Divisions; and
- coordinating campus compliance with affirmative action and equal opportunity requirements, referred to as AA/EEO compliance.

The UW-Madison is committed to providing equal opportunity and equal access and to complying with all applicable federal and state laws and regulations and University of Wisconsin System and university non-discrimination policies and procedures. The OED has prepared an informative Website (http://oed.wisc.edu/dishar.html) containing a series of questions and answers to describe how our discrimination/harassment complaint process works at the university. These questions and answers are meant to help employees, applicants for employment, students, applicants for admission, and anyone using the university's programs or activities, including visitors to campus, understand how they can file a complaint of discrimination/harassment and how the investigative process works.

International Student Services

International Student Services (ISS) offers a wide variety of services and programs to international students at the University of Wisconsin-Madison. The ISS staff provides information and programs to international students about the campus and community and provide support and assistance concerning visas and related immigration issues. ISS serves the more than 4,000 international students on the campus at any given time.
For more information about ISS, please see their website at http://www.iss.wisc.edu/index.html

Writing Center

The UW Writing Center (http://writing.wisc.edu/) provides free of charge face-to-face and online consultations which focus on a number of different writing scenarios (i.e. drafts of course papers, resumes, reports, application essays, cover letters, theses, etc). Writing Center instructors will not edit or proofread papers. Instead, their goal is to teach students to edit and proofread in order to become a better, more confident writer. Telephone: (608) 263-1992 Location: 6171 Helen C. White Hall

McBurney Disability Resource Center

Students who have a documented disability, or suspect that they may have an undiagnosed disability are encouraged to contact the McBurney Disability Resource Center (http://www.mcburney.wisc.edu/) to inquire about obtaining academic accommodations. The McBurney Center provides academic accommodations such as: adaptive/assistive technology access, assistive listening devices, document conversion, elevator keys, ASL interpreting, notetaking support, testing

accommodations, and reduced credit load recommendations to name a few. Students must provide documentation and be registered with the McBurney Center to receive at Verified Individualized Services & Accommodations (VISA) before they can obtain accommodations. Telephone: (608) 263-2741 TTY: (608) 263-6393 Location: 1305 Linden Drive (1st floor)

Degree Requirements

Master's Degree Options & Requirements

The ISyE MS graduate program offers a 24- and 30-credit option. *Only UW-Madison ISyE undergraduate students* are eligible for the 24-credit option. Any student who did not receive their undergraduate degree from the UW-Madison ISyE department must pursue the 30-credit MS option in a selected focus area.

24-credit MS Professional Option Requirements:

24-credit Brochure & Information
24-credit Application (see page 25)

- Students need to identify an area of specialization for their 24-credit MS program. Areas of specialization include the five area groups of the department, as well as any combination of area groups or other ISyE-related topic of interest. For example, a student may want to study Human Factors & Health Systems. This is acceptable but both should be listed as the topic. Other students have combined ISyE focus areas with Business, Statistics, Computer Science, etc.
- At least 15 credits of ISyE courses, 500 level or above, in the student's area of specialization.
- Included in the 15 credits within ISyE, at least one course containing a significant project experience related to the student's area of specialization. Examples include: ISyE 476, 515, 565, 641, 653, 671, 672, or 3cr of 699. Any course(s) taken as an undergraduate *cannot* be taken again.
- No more than six credits of independent study.
- At least nine credits of electives that relate to the student's area of specialization (examples include: statistics, business, computer science, other engineering courses).
- An attached paragraph explaining how the student's chosen courses relate to their area of specialization and form an in-depth understanding of that topic.

* IE courses between 300-500 level may be used to fulfill this requirement *only* if approved by the Advisor and the Academic Affairs Committee Chair. Any course below the 300 level will not count towards a graduate degree per Graduate School policy.

30-credit MS Option Requirements:

The 30cr MS Option Requirements vary according to Focus Area:

- Decision Science and Operations Research
- Health Systems
- Human Factors & Ergonomics, prior to Fall 2010
- Human Factors & Ergonomics, Fall 2010 and after
- Manufacturing and Production Systems
- Quality Engineering

For the specific requirements for each Focus Are, please see pages 26-35.

Completing Your Master's Degree

In order to be eligible for graduation, an MS student must:

- Meet all MS degree course requirements
- Have a GPA of 3.0 or higher
- Have all grades entered, except for the current semester (all I or NR grades must be changed to an actual letter grade)
- Be enrolled in at least 2cr the semester in which they graduate or pay a Degree Completion Fee (which is equivalent to 2cr of tuition)

Each semester, the Graduate Coordinator will send out an e-mail asking for information from MS students who plan to complete their degree that semester. If you plan to graduate, please respond to this e-mail as soon as possible.
MS students who plan to graduate in a given semester must submit two documents to the ISyE Graduate Coordinator:

1. A completed planning grid signed by their advisor (see pages 26-34) and
2. A completed MS Warrant Request Form (this form can be found in the Student Services Office) ***Students need to submit these documents at least three weeks before the semester's degree deadline! This is NOT the final step, please read on below!***

The ISyE Graduate Coordinator will then check the students GPA, grades and courses to ensure they have met all the MS degree requirements. They will then send the MS Warrant Request Form to the Graduate School. Once the Graduate School approves the MS Warrant Request Form, they will send an actual warrant back to the Graduate Coordinator. An email will be sent to the student from the Grad Coordinator when the warrant has arrived and is ready to be picked up. ***Students must have their MS warrant signed, dated and returned to the Graduate Coordinator by the degree deadline.***

Double Majors: Students receiving a second master's degree from UW-Madison, and students receiving two master's degrees during the same semester, must submit official lists of courses used for each degree. Students can overlap up to 25% of credits from the program with the lower number of degree credit requirement. Example: One MS degree requires 30cr and the other requires 24cr. The student can overlap 25% of 24cr which is 6cr.

Things to remember when finishing your MS degree:

- Once a student submits their degree warrant, they will no longer be able to enroll in courses.
- Any student who holds an RA or TA position must be enrolled as a full-time student. Once a student graduates, they can no longer be paid because they can no longer enroll for future semesters. Students will maintain student status *only* until the graduation date for the semester they graduate.
- International students are required to add a diploma address in their Student Center or their diploma will NOT be mailed. For domestic students, the diploma will be mailed to their mailing address. The degree diploma will be mailed 12-14 weeks after the degree deadline. Students should log into their Student Center and verify their mailing/diploma address to be sure it is correct.
- An online survey will be e-mailed to all graduate students completing their degree. *This survey is extremely helpful to the department in tracking where students go after graduation.* We greatly appreciate your cooperation in completing this survey.
- Your e-mail account will be left active a few months after graduation. You will receive an e-mail notifying you when your account will be deactivated. Once a student has graduated, they can also apply for an UW alumni e-mail at the following website.
- Remember to keep in touch and feel free to contact the Student Services Office if you have any questions or concerns in the future!!!
- **For information on Commencement and Alumni Opportunities, see page 19.**

Ph.D. Degree Requirements

The Doctor of Philosophy degree is the highest degree conferred by the University. It is a research degree and is never conferred solely as a result of any prescribed period of study. The degree is only granted on evidence of general proficiency, distinctive attainment in a special field, and the ability for independent investigation (as demonstrated in a thesis presenting original research or creative scholarship with a high degree of literary skill).

The basic steps and requirements for a Ph.D. degree in the ISyE Department include:

1) Completion of at least 32 graduate level credits, including research credits
2) Qualifying Examination
3) Completion of Minor
4) Thesis Research & Committee
5) Preliminary Examination
6) Final Oral Examination

Qualifying Examination

Based on a student's background and previous coursework, the PhD advisor should determine the coursework needed for a student to prepare for the Qualifying Examination. The qualifying exam is usually given after one year of graduate study beyond the MS degree. However, the student *must* consult with their advisor before signing up for the Qualifying Exam.

The ISyE PhD qualifying examination is only offered once a year, in September. The exam consists of two requirements: fulfilling the student's Focus Area Qualifying Exam and fulfilling the Breadth Course Requirement.

Exam: For students in Decision Science, Health Systems, or Manufacturing & Production Systems, a written examination is given. For specific requirements, please see the ISyE Qualifying Exam webpage and the ISyE Qualifying Exam Policy.

Students in Human Factors must request a reading list from their advisor at least 6 months before taking the Qualifying Exam in September. They must them complete a take-home written exam and a 1hr oral exam. For specific requirements, please see the Human Factors Qualifying Exam Policy and the ISyE Qualifying Exam Policy.

Breadth Requirement: 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) outside of the student's focus area. Students can chose these courses from the list below and must attain a grade of B or above in both courses. The courses selected by the student must be approved by the student's advisor and must be in at least two areas that are different from the area group in which the student's qualifying exam is taken. These courses must be completed before a PhD student can request their Preliminary warrant.

Courses the student has taken before entering the Ph.D. program can be counted toward this breadth requirement, including courses taken as an undergraduate. Students should submit the course title and syllabus to the Graduate Coordinator. The Grad Coordinator will then seek approval from the Chair of Graduate Affairs.

List of Approved Breadth Requirement Courses from UW-Madison

From Decision Science and Operation Research area:
ISyE 425 Introduction to Combinatorial Optimization
ISyE 516 Introduction to Decision Analysis
ISyE 525 Linear Programming Methods
ISyE 620 Simulation Modeling and Analysis
ISyE 624 Stochastic Modeling Techniques
ISyE 632 Introduction to Stochastic Modeling
ISyE 633 Queuing Theory and Stochastic Modeling
ISyE 635 Tools and Environments for Optimization
ISyE 719 Network Flows
ISyE 720 Integer Programming
ISyE 723 Dynamic Programming and Associated Topics
ISyE 726 Nonlinear Programming Theory and Applications
ISyE 727 Nonsmooth Optimization
ISyE 730 Nonlinear Programming Algorithms
ISyE 735 Large Scale Optimization

From Health System Engineering area:
ISyE 417 Health Systems Engineering
ISyE 610 Design of Program Evaluation Systems
ISyE 617 Health Information Systems
ISyE 691 Decision Making in Health Care
ISyE 875 Assessment of Medical Technologies

From Manufacturing and Production Systems area:
ISyE 415 Introduction to Manufacturing Systems, Design and Analysis
ISyE 510 Facilities Planning
ISyE 605 Computer Integrated Manufacturing
ISyE 641 Design and Analysis of Manufacturing Systems
ISyE 643 Performance Analysis of Manufacturing Systems

From Human Factors Engineering area:
ISyE 349 Introduction to Human Factors
ISyE 555 Human Performance & Accident Causation
ISyE 556 Occupational Safety & Health Engineering
ISyE 564 Occupational Ergonomics & Biomechanics
ISyE 652 Sociotechnical Systems
ISyE 653 Organization & Job Design
ISyE 662 Design & Human Disability & Aging

From Quality Engineering area:
ISyE 512 Inspection, Quality Control & Reliability
ISyE 575 Introduction to Quality Engineering
ISyE 520 Quality Assurance Systems
ISyE 515 Engineering Management of Continuous Process Improvement
ISyE 612 Information Sensing & Analysis for manufacturing Processes

Ph.D. Minor

Students must complete a cohesive group of courses outside the ISyE major in order to add breadth to their Ph.D. The courses should help students in their Ph.D. research preparation. **The student must consult the requirements for his or her Ph.D. minor with their advisor before deciding which option to pursue. Please note that all Minor courses must be taken at UW-Madison. Transfer courses are not permitted.**

The Minor consists of two options:

Option A includes a minimum of 9 credits of coursework in a single department and requires approval by that department. Please check with the department for their specific Minor requirements.

Option B includes a minimum of 9 credits of coursework in two or more departments and may include ISyE courses that are not part of the student's major area. The student must chose a Minor Topic and also submit an attached paragraph to explain how their minor courses relate to the student's Minor Topic and provide a cohesive minor that will enhance the student's Doctoral Program. **For Option B, the minor proposal must be approved before or by the time six of the total credits required for the minor are completed.**

Students must submit their approved Minor Form before they can request their Preliminary Warrant. Minor approval forms for either option can be obtained on the web at in the Student Services Office (3182 Mechanical Engineering Building).

Thesis Research & Committee

Attainment of a Ph.D. degree requires the preparation of a thesis on a research topic selected by the student and their advisor. Once a research project is selected, the student must choose his or her thesis committee. The thesis committee shall consist of at least 5 members, including:

- The Committee Chair (the student's primary advisor). The Committee Chair must be an ISyE faculty. Emeritus faculty cannot serve as the Committee Chair.
- Four other graduate faculty members or former UW-Madison graduate faculty up to one year after resignation or retirement.
- At least one of the members of the committee must be from outside the Industrial and Systems Engineering Department.
- The 5th member of the committee, as well as any additional members, may be from any of the following categories: graduate faculty, faculty from a department without a graduate program, academic staff (including emeritus faculty), visiting faculty, faculty from other institutions, scientists, research associates, and other individuals deemed qualified by the executive committee (or its equivalent).

Preliminary Examination & Dissertator Status

This oral examination is based upon a written proposal and a detailed plan to carry out the Ph.D. thesis. The Preliminary exam signifies that point at which a PhD student has completed all the necessary course work and is ready to strictly carry out research for the rest of their program. Students must consult with their advisor for specific details of the requirements for the preliminary examination. Upon passage of the Preliminary Exam, PhD students become dissertators. A dissertator is a unique reduced tuition fee status for students who have completed all requirements for a Ph.D. degree except for the dissertation. To be eligible for the Preliminary Examination, a PhD student must:

- Have a GPA of 3.0 or higher
- Complete at least 32cr of graduate level courses in residence at UW-Madison (including research credits)
- Pass the Qualifying Exam and complete Breadth Requirement
- Submit completed Minor form
- Have all grades entered, except for the current semester. No Is or NRs can show on the student's transcript.

The preliminary exam warrant request must be submitted at least three weeks before the proposed exam date. Pre-Lim Exam warrant request forms can be obtained from the Student Services Office (3182 ME).

The ISyE Graduate Coordinator will then check the students GPA, grades and PhD requirements to ensure they have met all the Pre-lim requirements. They will then send the Pre-lim Warrant Request Form to the Graduate School. Once the Graduate School approves the Pre-liminary Warrant Request Form, they will send an actual warrant back to the Graduate Coordinator. An email will be sent to the student from the Grad Coordinator when the warrant has arrived from the Graduate School and is ready to be picked up. **Students should pick up their Pre-lim warrant from the Student Services Office and take it to their Pre-lim to have their committee sign. The Pre-lim Warrant must be dated *before* the first day of the semester they intend to become a dissertator.**

The Pre-liminary Warrant requires the signature of the Chair. The Graduate Coordinator can get the Chair's signature for the student, but please allow at least a week for this.

Ph.D. Warrant and Oral Defense

This examination requires a demonstration of the unique contributions of the research and a defense of the methods used and conclusions drawn. The Final Oral Defense must be completed within 5 years of passing the Pre-liminary Exam.

In order to be eligible for graduation, a PhD student must:

- Have a GPA of 3.0 or higher
- Meet all PhD degree requirements
- Have all grades entered, except for the current semester (all I or NR grades must be changed to an actual letter grade)
- Be enrolled in at least 3cr the semester in which they graduate or pay a Degree Completion Fee (which is equivalent to 12xs the per-credit dissertator rate of tuition)
- Have their PhD Final Oral Exam warrant signed and dated by the degree deadline.

The Final Oral Defense warrant request must be submitted at least four weeks before the proposed exam date. This form requires the signature of both the student's advisor and the Chair of the Department. Students can turn in the Final Oral Exam Warrant Request into the Student Services Office with only their advisors signature, and the Graduate Coordinator will obtain the Chair's signature. However, obtaining the Chair's signature can take some time, so please submit the form at least four weeks prior to the defense date. At this time, the Graduate Coordinator can assist the student in reserving a room for their defense.

The ISyE Graduate Coordinator will then check the students GPA and grades to ensure they meet the requirements. They will then send the Final Oral Exam Request Form to the Graduate School. Once the Graduate School approves the Final Oral Warrant Request Form, they will send an actual warrant and packet of relevant information back to the Graduate Coordinator. An email will be sent to the student from the Grad Coordinator when the Final Oral Exam Packet has arrived and is ready to be picked up.

Students should pick up their Final Oral Exam Packet from the Student Services Office and take it to their Final Oral Defense to have their committee sign. This packet also includes information on publishing your dissertation, formatting requirements, and a couple of surveys from the Graduate School. The Final Oral Defense Warrant must be dated *on or before* the degree deadline for the semester. Please note effective Spring 2010, committee members no longer have to sign the title page.

After the final defense, the student must follow all of the procedures described in the document The Three Ds of Defending. The student is responsible for setting up an exit interview with the Graduate School and depositing their thesis.

Things to remember when finishing your PhD degree:

- Once a student submits their final dissertation to the Graduate School, they will no longer be able to enroll for future semesters.
- Any student who holds an RA or TA position must be enrolled as a full-time student. Once a student graduates, they can no longer be paid because they can no longer enroll for future semesters. Students will maintain student status *only* until the graduation date for the semester they graduate.

- International students are required to add a diploma address in their Student Center or their diploma will NOT be mailed. For domestic students, the diploma will be mailed to their mailing address. The degree diploma will be mailed 12-14 weeks after the degree deadline. Students should log into their Student Center and verify their mailing/diploma address to be sure it is correct.
- An online survey will be e-mailed to all graduate students completing their degree. *This survey is extremely helpful to the department in tracking where students go after graduation.* We greatly appreciate your cooperation in completing this survey.
- Your e-mail account will be left active a few months after graduation. You will receive an e-mail notifying you when your account will be deactivated. Once a student has graduated, they can also apply for an UW alumni e-mail at the following website.
- Feel free to contact the Student Services Office if you have any questions or concerns in the future, and please keep in touch!!!

Commencement

Graduate students are encouraged to participate in the commencement ceremony. Commencement ceremonies are held in December and May. Because there is no ceremony offered during the summer, students have the option to participate in the Fall or Spring ceremony. Students should think of their degree completion and participation in the commencement ceremony as two separate events.

To participate in the commencement ceremony for any given semester, the student must simply notify the Graduate Coordinator **at least 8 weeks before the ceremony.** A student can decide to participate in the ceremony up until the day of the ceremony, but if they have not notified the Graduate Coordinator 8 weeks before the ceremony, their name will not be printed in the commencement program.
Traditionally, PhD students are escorted by their faculty advisor. PhD students should discuss their commencement plans with their advisor.

For more information on ordering the proper attire, dates and times, please see the Secretary of the Faculty website. **Don't forget to order your cap and gown!!!**

Alumni Opportunities

Please note that these opportunities are only available to students who have graduated and are considered alumni.

The ISyE Alumni-Student E-mentoring Program: This is a convenient opportunity for ISyE alumni to make a big difference in the life of a current ISyE undergraduate student, in as little as 15 minutes a week. This program utilizes the MentorNet online system (www.mentornet.net) to facilitate connections between undergraduate students and interested mentors. Because mentors and students can interact by e-mail, they can communicate wherever and whenever they choose. Mentors will be able to control their availability and acceptance of a student as their protégé. A mentoring relationship lasts 8 months. Please consider this opportunity to make a major positive impact on an ISyE student by sharing "real world" experiences, encouragement, and advice. Want to know more? See the MentorNet FAQs at http://www.mentornet.net/documents/other/help/mentorfaq.aspx

How to sign up as a mentor:

1) Join the MentorNet Community at www.mentornet.net
2) Follow the one-on-one E-mentoring Program links to create a Mentor profile. In your profile, you can indicate your preferences for protégés (i.e. UW-Madison ISyE students only).

ISyE Alumni LinkedIn Group: This is a great opportunity to stay connected to your classmates and build a professional network through ISyE alumni. The UW-Madison ISyE Alumni LinkedIn Group will allow you to search, find, and contact other ISyE alumni in addition to the hundreds of thousands of users you can reach through your extended LinkedIn network. It is a convenient approach to connect with other alumni and maintain up-to-date contact information. LinkedIn employs an opt-in-approach to selective networking, meaning you control the amount of detail you share and who to share it with. Contacts only occur with and through people you know and trust. And, there is no cost to join LinkedIn!

Financial Support/Insurance Benefits

TA/RA/PA

The ISyE Department offers several different types of financial support for graduate students. Three common types of financial support are Teaching Assistantships, Research Assistantships, and Project Assistantships (TA/RA/PA respectively). Teaching Assistants, Research Assistants, and Project Assistants with at least a 1/3 appointment are eligible to receive tuition remission and health insurance coverage. Please note, students who receive tuition remission are still ***required to pay segregated fees*** by the tuition due date. The amount charged for segregated fees is based upon the number of credits the student has enrolled in. Tuition and Segregated fees can be viewed and paid through the student center section of a student's MyUW account.

Applying for Teaching Assistantships:

Teaching Assistant (TA) positions are highly competitive, and the number of positions offered is relatively small compared to the number of applicants. Professors generally choose their TAs, or they may ask the Department Administrator to post an announcement recruiting applicants. In that event, an email will be sent to ISyE graduate students, and a recruitment announcement will be posted.

Speak Test: First time, non native English-speaking TAs are required to take a SPEAK test to prove they possess the required level of oral English proficiency to qualify for a TA appointment. ISyE requires a score of 50 or greater (UW requirement is 45). ISyE does not accept a passing score on the TSE test. For more information go to: http://www.english.wisc.edu/esl/speak-test.html.

Criminal Background Check: A criminal background check will be conducted on all new TAs.

Required Training – New teaching assistants: College policies require these workshops for all **new** TAs. The workshops benefit TAs and the students with whom they interact. Because each university is different, even those who have attended TA or teacher training at another university are required to participate. You will build from a common base and share perspectives with both new and experienced engineering educators.

The mission of the program is to improve the quality of undergraduate and graduate education through a series of workshops that enable teaching assistants to develop professionally and to continuously improve those skills needed to enhance student learning.

To accomplish this mission, the program will aim to generate enthusiasm and excitement about teaching, and place an emphasis on the value and importance of their role as a teacher. Further, this program aims to expose participants to education and learning theories and to provide practical suggestions to help teaching assistants with their classroom responsibilities. Finally, the program is designed to foster communication among those who teach in the College of Engineering.

Required Training – Experienced TAs: A TA appointment requires attendance at this program. Please choose workshops that will meet your needs and the needs of your students.

Information on the New Educators Orientation (NEO) can be obtained at: http://www.engr.wisc.edu/services/elc/neeo/
Information on the Teaching Improvement Program (TIP) can be obtained at: http://www.engr.wisc.edu/services/elc/tip/

There are two classifications of Teaching Assistants based on experience training and education.

Standard TA:
A TA who does not meet the qualifications of a Senior TA.

Senior TA:

Has had one and two-thirds (1 ⅔) or more semester-units of experience and has completed all course-work and departmental requirements for candidacy for a Ph.D., or has already been awarded a Ph.D. and has completed one and two thirds (1 ⅔) or more semester units of experience prior to employment.

Note: TAs are included in a labor agreement between the State of Wisconsin and the Teaching Assistants Association. This agreement contains valuable information regarding Teaching Assistantships and it can be found at: http://www.taa-madison.org/about/TAA_07-09_CBA.pdf.

Teaching Assistants will receive student evaluations using the College of Engineering Teaching Evaluation Form.

Applying for Research Assistantships

Professors decide whom they will appoint as RAs on their research grants. Professors review graduate applicants when hiring new Research Assistants.

Applying for Project Assistantships

There are a few project assistant opportunities on campus. Professors decide whom they will appoint as PAs on their research grants. Announcements of openings are sometimes posted on the UW Job Center Web Page (**www.jobcenter.wisc.edu**).

Credit Load Requirements for TA/RA/PA

Teaching, Project, and Research Assistants must be enrolled as a full-time student (8-12 credits) for any semester in which they are being paid. Please see page 10 for more information.

Health Insurance

TAs, PAs, RAs, and fellows holding a minimum 1/3 appointment are eligible for group health insurance through the university. The university will pay for most of the premium. You are encouraged to take care of this as soon as possible, as the **strict deadline of a 30-day enrollment period** is observed.

All UW-Madison students are eligible to receive health care at the University Health Service (UHS). Hospitalization and emergency room services are not included in UHS benefits. In order to activate your insurance benefits you must see the Payroll & Benefits Specialist.

Health Insurance for International Students: *International students are required to purchase SHIP insurance unless they have other health insurance that meets certain minimum standards. International students with an RA or RA/TA appointment are eligible for UW health insurance; once you sign up for a UW health insurance plan you are automatically waived from the SHIP requirement. For more information see: http://www.uhs.wisc.edu/* .

Tax Information

All RA, TA and fellowship income is subject to federal and state income tax. However, only RAs and TAs have taxes withheld from their checks; fellows do not. Only TAs are subject to social security tax (but these can be waived if you submit a Student Enrollment Verification form). You may want to save receipts for school fees, books, and supplies in case you are able to claim tax deductions for them. Check with your tax advisor. Tax withholding (W4) forms can be easily accessed online. For questions regarding specific tax situations, students are encouraged to contact either the Internal Revenue Service or a tax advisor. The UW does not provide tax advice.

Tax Information for International Students: *Non-US residents from countries with which the US has a tax treaty may be tax exempt. All international graduate students are required to attend a Tax Workshop for International Visitors sponsored by Employee Compensation and Benefits Services. More information about the workshop can be found at https://admin.engr.wisc.edu/.*

Computing in Industrial & Systems Engineering

Division of Information Technology (DoIT)

DoIT (Division of Information Technology) offers students the following services:

- Advice on software or hardware
- A network connection
- Training
- Help 7 days a week
- Warranties
- Repair & installation
- Software training for students
- Sales advice and great prices
- Tech help is free

For more information go to: http://www.doit.wisc.edu/students/

Computer-Aided Engineering (CAE)

CAE is a College of Engineering facility available to any student with an engineering major or enrolled in an engineering course, as well as faculty and staff of the College. CAE provides users access to facilities and resources which allows them to effectively compute on the engineering campus. Users have access to a broad range of resources and services which include:

- Windows XP and Linux computer lab access
- Networked file space.
- Laser and Color Printers.
- Hundreds of software titles
- Email and webpage access.
- CAE Consultants in Rm. 172 CAE Building, by phone @ 262-5349, or helpdesk@cae.wisc.edu.
- Online help
- Access to account management features.
- CAE file restoration.

For more information go to: http://www.cae.wisc.edu/newuserhelp

Support by Department/Center

In-office computer support for College of Engineering faculty is provided by your Departmental Support Person (DSP). Services Provided by DSPs:

- Diagnose network problems
- Diagnose computer problems
- Install software and/or upgrades
- Report any problems that cannot be resolved to CAE for further assistance

Office/Building/Supplies

Building Hours

The Mechanical Engineering Building is open Monday through Friday from 6am to midnight. The building is closed on Saturday, Sunday, and holidays.

Keys

Steps to Obtain a Key for Research Lab

Keys to ISyE research labs are issued to undergraduate and graduate students who have a paid appointment in the ISyE Department. Professors will email the ISyE Department Administrator with authorization for a student to be issued a key. The student will then be referred to the Department Office to obtain the required paperwork and their key. A $20.00 deposit is required for each key.

Steps to Obtain an Access Card to the Mechanical Engineering Building

An access card to the Mechanical Engineering Building can only be issued to a graduate student who has a paid appointment in the ISyE Department and a key to a research lab in the Mechanical Engineering Building.
Professors will email the ISyE Department Administrator with authorization for a student to be issued an access card. The student will then be referred to the Department Office to obtain the required paperwork. A $25.00 deposit is required for access cards.

Key Rules

- Do not share this key with others.
- Do not duplicate.
- Please return keys "in person" (do not pass on to others).

Offices & Desk Area

Desk Assignment

Students who are receiving financial support from the ISyE department in the form of a Teaching Assistantship or Research Assistantship will receive office space. For further information contact the Department Administrator.

Please be mindful of your office-mates and keep your office area clean and professional.

If you are a teaching assistant and share an office with other graduate students, let them know your office hours and please have them posted at your desk. Some TAs have found it helpful to leave notes at their desk, so if someone is looking for them they know where they can find them**. When you graduate or no longer use your desk area, you are required to thoroughly clean your desk!**

Office Supplies

Please see one of the office assistants in the ISyE Department Office (ME3270) or the Department Administrator (ME3246) to inquire about office supplies.

Telephones

Student access to university telephone services is limited to internal university and local calls. University-related (research, teaching, extension) long distance calls may be made on the telephone of your advisor with his/her permission. When making an internal university call it is only necessary to dial the last five digits of the phone number. When making a local call, first dial “9.”

Mailboxes

All graduate students are assigned a mailbox in the hallway outside of 3121 ME. Students should check to make sure their name is listed. Students should report missing names to the department office (3270 ME) or the Student Services HUB (3182 ME). Students should check their boxes daily for university and department information. Personal mail should be sent to home addresses.

Mailing Address

[Your Name]
University of Wisconsin
Department of Industrial & Systems Engineering
3270 Mechanical Engineering Building
1513 University Ave.
Madison, WI 53706

Out-going Mail

Personal mail can be taken to the department office (3270 ME) or to the loading dock on the first floor of the ME building (between ME and ERB). In both places there is a U.S. mail and Campus Mail slot for outgoing mail. The nearest drop box for UPS is located on the loading dock.

Photo copying

If you are a graduate student who has an assistantship or is doing research in a lab, you are assigned an ID code for the copy machine. The photocopy machine/scanner/fax machine is available in the Copy Room next to the department office in 3262 ME. Photocopying on the department copy machine is NOT permitted for personal purposes, including for courses being taken by the student.

Copiers for personal use are available nearby at Wendt Library, Union South, and Bob's Copy Shop. When using the copy room, please keep the room clean by throwing out paper scraps, staples, etc. Report user-related problems to the department office. They will call for repair if necessary.

Travel or Purchases for University Business

Before traveling or purchasing supplies for which you expect to be reimbursed or paid directly with university funds, you should meet with Denise Roberts (3270 ME), the department's financial specialist. Due to the complexity and number of rules and regulations, not to mention "illegal" vendors, it is highly recommended that you check with her before you make any arrangements or purchases for the first time. There are many options for payment and she'll be happy to discuss the best choice for you.

Recycling

Recycling is mandatory in Madison. Recyclable containers (aluminum cans, tin/steel, glass, and high-density plastic bottles) should be placed in the blue funnel-topped waste cans you will see in the hallways. Newspapers should be put in the blue waste cans labeled "Newspapers." Offices are equipped with brown wastebaskets for recyclable office paper. See the "UW-Madison Recycling Guide" for more details. Trash cans are emptied once a week. At other times, full containers may be left in the hallway for emptying.

ISyE Department Policies

For ISYE Department Policies, please see http://www.engr.wisc.edu/ie/current/grad/policy/

Application for
PROFESSIONAL INDUSTRIAL AND SYSTEMS ENGINEERING OPTION

***** This form must be accompanied by a paragraph explaining how these courses provide a cohesive program related to the student's area of specialization.*****

Name	
Campus ID	
Area of Specialization	
Advisor (Print Name)	

Dept & Catalog #	Course Name	# of Credits	Check 15cr in ISYE**	Semester & Final grade
Project Course:				

Examples of Project Course include: ISYE 476, 515, 565, 641, 653, 671, 672, or 3cr of 699

Advisor's Signature:		**Date:**	
Ac. Affairs Comm. Chair Signature:		**Date:**	

NOTE: ** ISyE courses between 300-500 level may be used to fulfill this requirement only if approved by the Advisor and the ISyE Academic Affairs Committee. Any course below the 300 level will not count towards a graduate degree. *This form must be filled out completely* and submitted to the Industrial & Systems Engineering Department Student Services Office (3182 ME Bldg.). In addition, students must complete the online Graduate School application and pay the application fee before a decision can be made on your application.

ISYE MS REQUIREMENTS: Decision Science/Operations Research Area

STUDENT NAME: _____ CAMPUS ID#: _____ DATE: _____

ADVISOR NAME: _____ ADVISOR SIGNATURE:_____

Cont. on For PHD: Yes No Degree Requirements Confirmed (Office use only): _____

ISYE MS REQUIREMENTS: Human Factors Research Area (*Prior to Fall '10*)

STUDENT NAME: _____ CAMPUS ID#: _____ DATE: _____

ADVISOR NAME: _____ ADVISOR SIGNATURE:_____

Core Courses: 18 cr total		**Term Taken**	**Grade**
Optimization (6 cr min)			
IE 525	Linear Programming Methods		
IE 635	Tools and Environ. for Optimization		
IE 719	Network Flows		
IE 720	Integer Programming		
IE 723	Dynamic Programming and Associated Topics		
IE 726	Nonlinear Programming Theory and Applications		
IE 727	Nonsmooth Optimization		
IE 730	Nonlinear Programming Algorithms		
Auth Substitution			
Auth Substitution			
Stochastic Processes (6 cr min)		**Term Taken**	**Grade**
IE 624	Stochastic Modeling Techniques		
IE 632	Intro to Stochastic Processes		
IE 633	Queuing Theory and Stoch. Modeling		
IE 643	Performance Analy. of Mfg. Systems		
Auth Substitution			
Auth Substitution			
Simulation (3 cr min)		**Term Taken**	**Grade**
IE 620	Simulation Modeling & Analysis of IE Systems		
Auth Substitution			
Auth Substitution			
Organizations, Decisions, and Implementation Issues (3 cr min)		**Term Taken**	**Grade**
IE/ME 513	Analysis of Capital Investments		
IE 516	Intro to Decision Analysis		
IE 641	Design & Analysis of Mfg. Systems		
IE 658 /OTM 758	Managing Techno Change in Mfct'g Systems		
ISyE/OTM 671	E-Business - Technologies, Strategies and Applications		
ISyE/OTM 672	E-Business Trans - Design, Analysis and Justification		
MHR 700	Organizational Behavior		
MHR 720	Organization & Mgmt Processes		
Auth Substitution			
Electives: 12 cr total; Advisor's approval required		**Term Taken**	**Grade**
Independent study or project work: 6 cr max		**Term Taken**	**Grade**

Cont. on For PHD: Yes No Degree Requirements Confirmed (Office use only): _____

For a list of Tools and Methods courses, please see:
http://www.engr.wisc.edu/ie/current/grad/programs/Toolsandmethods.htm

* You may count multiple ISYE 691, 692, 699, 854, 859 and 961 graduate seminars toward satisfying the MS degree requirements, but they must be approved by your advisor. Your advisor will determine whether a seminar course counts toward credit in Physical Ergonomics, Macroergonomics, Cognitive Ergonomics or Tools & Methods.

Total: 24 cr distributed in the following four categories; Must have 9 cr in one of the first 3 categories			
1. Sociotech Systems & Macro ergonomics (3-9 cr)*		**Term Taken**	**Grade**
IE 652	Sociotechnical Systems		
IE 653	Organization & Job Design		
IE 610	Design of Program Evaluation Systems		
IE 753	Seminar in Org & Job Design (topics may vary)		
IE 756	Seminar in Technology & Society (topics may vary)		
IE 691/692/699*			
IE 854/859/961*			
2. Ergonomics (3-9 cr)*		**Term Taken**	**Grade**
IE 564	Occupational Ergonomics and Biomechanics		
IE 662	Design for Human Disability & Aging		
IE 764	Occupational Biomechanics		
IE 691/692/699*			
IE 854/859/961*			
3. Safety (3-9 cr) *		**Term Taken**	**Grade**
IE 555	Human Performance & Accident Causation		
IE 556	Occupational Safety & Health Engineering		
IE 552	Human Factors Design and Evaluation		
IE 574	Methods for Probabilistic Risk Analysis of Nuclear Power Plants		
IE 618	Societal Risk Management of Tech Hazard		
IE 691/692/699*			
IE 854/859/961*			
4. Tools And Methods, see back (6cr min)		**Term Taken**	**Grade**
5. Master's Project Requirement (3-6cr min)		**Term Taken**	**Grade**
6. Elective (3 cr max)		**Term Taken**	**Grade**

ISYE MS REQUIREMENTS: Human Factors Research Area (*Effective Fall '10*)

STUDENT NAME: _____ **CAMPUS ID#:** _____ **DATE:** _____

ADVISOR NAME: _____ **ADVISOR SIGNATURE:**_____

Cont. on For PHD: Yes No Degree Requirements Confirmed (Office use only): _____

For a list of Tools and Methods courses, please see: http://www.engr.wisc.edu/ie/current/grad/programs/Toolsandmethods.htm

For a list of Tools and Methods courses, please see:
http://www.engr.wisc.edu/ie/current/grad/programs/Toolsandmethods.htm

* You may count multiple ISYE 691, 692, 699, 854, 859 and 961 graduate seminars toward satisfying the MS degree requirements, but they must be approved by your advisor. Your advisor will determine whether a

TOTAL: 30 credits required			
1. Physical Ergonomics (3cr min)		**Term Taken**	**Grade**
IE 552	Human Factors Design		
IE 555	Human Performance & Accident Causation		
IE 564	Occupational Ergonomics and Biomechanics		
IE 662	Design for Human Disability & Aging		
IE 764	Occupational Biomechanics		
IE 691/692/699*			
IE 854/859/961*			
2. Cognitive Ergonomics (3cr min)		**Term Taken**	**Grade**
IE 549	Human Factors Engineering		
IE 552	Human Factors Design		
IE 555	Human Performance & Accident Causation		
IE 556	Occupational Safety & Health Engineering		
IE 559	Patient Safety & Error Reduction		
IE 691/692/699*			
IE 854/859/961*			
3. Macroergonomics (3cr min)		**Term Taken**	**Grade**
IE 552	Human Factors Design		
IE 555	Human Performance & Accident Causation		
IE 556	Occupational Safety & Health Engineering		
IE 559	Patient Safety & Error Reduction		
IE 610	Design of Program Evaluation Systems		
IE 652	Sociotechnical Systems		
IE 653	Organization & Job Design		
IE 753	Seminar in Organization & Job Design		
IE 756	Seminar in Technology & Society		
IE 691/692/699*			
IE 854/859/961*			
4. Tools And Methods, see back (6cr min)		**Term Taken**	**Grade**
5. Master's Project Requirement (3-6cr min)		**Term Taken**	**Grade**
6. Elective (3 cr max)		**Term Taken**	**Grade**

seminar course counts toward credit in Physical Ergonomics, Macroergonomics, Cognitive Ergonomics or Tools & Methods.

TOTAL: 30 Credits Required

- ISYE 349 Introduction to Human Factors or equivalent is required. It is a prerequisite for all other curriculum courses (required, but does not count toward the 30 credits).
- 9 credits of foundation courses. Take 1 course in physical ergonomics (P), cognitive ergonomics (C), and macroergonomics (M). Courses listed under multiple areas can be counted toward only one area.
- 9-12 credits of human factors and ergonomic electives beyond those taken as foundation courses.
- 6 credits of Tools and Methods.
- 3-6 credits of MS Project or Thesis.
- At least 15 of the 30 credits must be within the Industrial & Systems Engineering Department.
- You may count multiple ISyE 816, 854, 859 and 961 graduate seminars toward satisfying the MS Degree Requirements. Your advisor will determine if a seminar counts toward a human factors/ergonomic elective or Tools/Methods.

TOOLS AND METHODS (6 cr)

On a yearly basis, the HFE faculty group will update the list of Tools and Methods courses, which can be found at **http://www.engr.wisc.edu/ie/current/grad/programs/Toolsandmethods.htm**. Advisors will decide which set of Tools and Methods courses is appropriate for the students. Following are categories of Tools and Methods courses.

- *Research Methods* *-Statistics*
- *Qualitative Research* *-Biomechanics Methods*

MS PROJECT or THESIS (3-6 cr)

All human factors graduate students are required to satisfactorily complete at least three credit hours devoted to directed research, design, development, or application, and prepare a written report covering this work. Students expecting to continue for the Ph.D. degree are encouraged to write a Master's Thesis. The choice of writing a formal thesis or a research report is made between each student and their advisor.

ISYE MS REQUIREMENTS: Health Systems Research Area (*1/07 & Beyond*)

STUDENT NAME: _____ CAMPUS ID# _____ DATE: _____

ADVISOR NAME: _____ ADVISOR SIGNATURE: _____

Cont. on For PHD? Yes No Graduation Requirements Confirmed (office use only)**: _____**

Foundation Courses (6 cr min)		**Term Taken**	**Grade**
ISyE 417	Introduction to Health Systems Engineering		
ISyE 610	Design of Program Evaluation Systems		
ISyE 617	Health Information Systems		
Auth Substitution			
Design and Analysis (3 cr min)		**Term Taken**	**Grade**
ISyE 515	Engr Mgmt Continuous Process Improvement		
ISyE 516	Introduction to Decision Analysis		
ISyE 653	Job and Organizational Design		
ISyE 691	Long Term Care		
Auth Substitution			
Auth Substitution			
Statistics (3 cr min)		**Term Taken**	**Grade**
Ed Psych 711	Hierarchical Linear Modeling		
Ed Psych 862	Multivariate Analysis		
Psych 610	Statistical Analysis of Psychological Experiments		
Stat 333	Applied Regression Analysis		
Stat 424/824	Statistical Experimental Design for Engineers		
Stat 541	Introduction to Biostatistics		
Stat 701	Applied Time Series Analysis, Forecasting & Control I		
Auth Substitution			
ISyE Tools (6 cr min)		**Term Taken**	**Grade**
ISyE 513	Capital Investment Analysis		
ISyE 620	Discrete Event Simulation		
ISyE 624	Stochastic Modeling		
ISyE 633	Queuing Theory		
ISyE 691	Topic – Decision Making In Health Care		
ISyE 691	Topic – MUST BE approved IN ADVANCE by advisor		
ISyE 723	Dynamic Programming		
ISyE 816	Topic – MUST BE approved IN ADVANCE by advisor		
ISyE 729	Behavioral Analysis of Management Decision Making		
Auth Substitution			
Auth Substitution			
CONCENTRATION AREA (6 cr min in one area)			
Area 1: Electronic Health Care		**Term Taken**	**Grade**
Ag 617	Interactive Health Communication		
ISyE 662	Design and Human Disability and Aging		
ISyE 671	E-Busn: Technologies, Strategies & Applications		
ISyE 672	E-Busn Transformation: Design, Analysis & Justification		
Auth Substitution			
Auth Substitution			
Area 2: Health Outcomes & Evaluation		**Term Taken**	**Grade**
Nurs 716	Health Program Planning, Eval & Quality Improvement		
PHS 795	Determinants of Health*		
PHS 797	Introduction to Epidemiology		
PHS/ISyE 875	Assessment of Medical Technologies** – MUST BE approved IN ADVANCE by advisor		
PHS 876	Measuring Health Outcomes		
Auth Substitution			

Area 3: Quality/Safety		Term Taken	Grade
ISyE 555	Accident Causation		
ISyE 556	Occupational Health and Safety		
ISyE 575	Introduction to Quality Engineering		
ISyE 715	Advanced Methods for Quality Improvement		
ISyE 854	Special Topics in Organization Design		
Auth Substitution			
Electives (6 Credits)	MUST BE approved IN ADVANCE by advisor	**Term Taken**	**Grade**
	Area 3: Quality/Safety		

*Students can receive credit for either ISyE 417 or PHS 795 but not both.

EXIT REQUIREMENT

To complete the MS program, a GPA of 3.0 or above in graduate level courses and 30 degree credits are required with 15 degree credits in the ISyE Department.

**Please complete & return form to Student Services, 3182 ME Bldg your final semester.

JOB PLACEMENT

Contact:

Engineering Career Services Office
1550 Engineering Drive, Rm M1002
Madison, WI 53706
Tel: (608) 262-3471
FAX: (608) 262-7262
http://www.engr.wisc.edu/services

FURTHER INFORMATION

Contact:

University of Wisconsin-Madison
Industrial Engineering Department
1513 University Avenue, Rm 3270
Madison, WI 53706-1572
Tel: (608) 263-3955
FAX: (608) 262-8454
Email: ie-admission@engr.wisc.edu
http://www.engr.wisc.edu/ie

ISYE MS REQUIREMENTS: Manufacturing & Production Systems Area (*Fall '10 & beyond*)

STUDENT NAME: _____ CAMPUS ID#: _____ DATE: _____

ADVISOR NAME: _____ ADVISOR SIGNATURE:_____

Cont. on For PHD: Yes No Degree Requirements Confirmed (Office use only):_____

MS Degree Requirements: 30 degree credits total			
CORE COURSES (6 cr; select any two)		**Term Taken**	**Grade**
ISYE/ME 510	Facilities Planning		
ISYE 605	Computer Integrated Manufacturing		
ISYE 615	Production Systems Control		
FOCUS COURSES (18 cr total; must have 2 categories w/ 6 cr in each)			
Manufacturing System Modeling & Analysis		**Term Taken**	**Grade**
ISYE/ME 510	Facilities Planning		
IE/ OTM 578	Facilities Location Models		
ISYE 615	Production Systems Control		
ISYE/OTM 620	Sim Model & Analysis of ISYE Systems		
ISYE/MATH/OTM/STAT 632	Intro-Stoch Processes		
ISYE/ME 641	Design & Analysis of Mfg. Systems		
ISYE 643	Performance Analysis of Mfg. Systems		
ISYE 816	Topic: Supply Chain Optimization		
OTM 640	Business Logistics Analysis		
OTM 722	Logistics Management		
Auth Substitution			
Computer Integrated Mfg. Processes and Technology		**Term Taken**	**Grade**
ISYE 415	Intro to Mfg. Systems, Design & Analysis		
ISYE 605	Computer Integrated Manufacturing		
ISYE 612	Info. Sensing and Analysis for Man Processes		
ISYE 655	Advanced CAD/CAM		
ISYE 691	TOPIC: Information Sensing and Technology		
ME 417	Introduction to Polymer Processing		
ME 418	Engineering Design with Polymers		
ME 419	Fundamentals of Injection Molding		
ME 439	Introduction to Robotics		
ME 447	Computer Control of Machines & Processes		
ME 601	Topic: Rapid Prototyping and Adv. Mnf'g		
ME 739	Advanced Automation and Robotics		
Auth Substitution			
Manufacturing System Management		**Term Taken**	**Grade**
ISYE 513	Analysis of Capital Investments		
ISYE 515	Engr Mgmt-Continuous Process Improvement		
ISYE 658/OTM 758	Managing Tech Change in Mfg Systems		
OTM 654	Production Planning & Control		
OTM 724	Strategic Global Sourcing		
Auth Substitution			
Information & Decision Technology		**Term Taken**	**Grade**
CS 302	Introduction to Programming		
CS 367	Introduction to Data Structures		
CS 540	Introduction to artificial Intelligence		
CS 564	Database Mgmt System: Design & Implementation		
ISYE 516	Introduction to Decision Analysis		
ISYE 671	E-Business: Tech, Strategies & Appl.		
OTM 765	Database Concepts for Oper Management		
Marketing 765	Enterprise Systems and Supply Chain Mgt		
Auth Substitution			

BREADTH COURSE (3 cr; select one course)			
Human Factors & Ergonomics in Manufacturing		**Term Taken**	**Grade**
ISYE 555	Human Performance and Accident Causation		
ISYE 564	Ergonomics in Manufacturing & Industry		
ISYE 653	Organization & Job Design		
ISYE 764	Occupational Biomechanics		
Auth Substitution			
Quality in Manufacturing		**Term Taken**	**Grade**
ISYE 512	Inspection, Quality Control & Reliability		
ISYE 520	Quality Assurance Systems		
ISYE 575	Introduction to Quality Engineering		
OTM 770	Quality & Productivity Improvement		
Auth Substitution			
FREE ELECTIVE (3 cr) Can include Independent Study or Research Cr.		**Term Taken**	**Grade**

**Please complete & return form to Student Services, 3182 ME Bldg your final semester.

EXIT REQUIREMENTS

To complete the MS program, a GPA of 3.0 or above in graduate level courses and 30 degree credits are required with 15 degree credits in the ISYE Department.

JOB PLACEMENT

Contact:
Engineering Career Services Office
Engineering Centers Building
1550 Engineering Drive, Room M1002
Madison, WI 53706
Tel: (608) 262-3471
FAX: (608) 262-7262
http://www.engr.wisc.edu/services

FURTHER INFORMATION

Contact:
University of Wisconsin-Madison
Industrial Engineering Department
1513 University Avenue, Room 3270
Madison, WI 53706-1572
Tel: (608) 262-2686
FAX: (608) 262-8454
Email: ie-admission@engr.wisc.edu

ISYE MS REQUIREMENTS: Quality Engineering Research Area

STUDENT NAME: _____ CAMPUS ID#: _____ DATE: _____

ADVISOR NAME: _____ ADVISOR SIGNATURE:_____

Cont. on For PHD: Yes No Degree Requirements Confirmed (Office use only)**: _____**

FOUNDATION COURSES (All Required—12 cr)		**Term Taken**	**Grade**
IE 512	Inspection, Quality Control, and Reliability		
IE 515	Engineering Mgmt of Cont Process Improvement		
IE 520	Quality Assurance Systems		
IE 575	Introduction to Quality Engineering		
Auth Substitution			
ORGANIZATIONAL DYNAMICS/CHANGE & SOCIOTECHNICAL SYSTEMS (6 cr min)		**Term Taken**	**Grade**
IE 652	Sociotechnical Systems		
IE 653	Organization and Job Design		
IE 753	Seminar in Organization & Job Design		
IE 854	Special Topics in Organizational Design		
MHR 700	Organizational Behavior		
OTM 770	Intro to Quality & Prod Improv (Double count)		
Auth Substitution			
STATISTICAL METHODS (3 cr min)		**Term Taken**	**Grade**
ISyE 612	Information Sensing & Data Analysis for Manufacturing		
STAT 333	Applied Regression Analysis		
STAT 349	Introduction to Time Series		
STAT 411	Introduction to Sample Survey Theory and Methods		
STAT 421	Applied Categorical Data Analysis		
STAT 701	Applied Time Series Analysis—Forecasting and Control		
STAT 756	Multivariate Analysis		
STAT 803	Experimental Design I		
STAT 849	Theory and Appl of Regression & Analysis of Variance I		
Auth Substitution			
IE ELECTIVES (3 cr min)		**Term Taken**	**Grade**
IE 417	Health Systems Engineering		
IE 513	Analysis of Capital Investments		
IE 610	Design of Program Evaluation Systems		
IE 613	Systems Evaluation		
IE 620	Simulation Modeling & Analysis		
IE 641	Design & Analysis of Mfg Systems (Double count)		
IE 658/OTM 758	Managing Technological Change in Mfg Systems		
IE 691	Special Topics in ISYE (Advisor consent required prior)		
IE 946	Adv Topics Mfg Sys: Diag & Control of Q in Lg Mfg Sys		
Auth Substitution			
BUSINESS ELECTIVES (3 cr min)		**Term Taken**	**Grade**
INDEPENDENT STUDY (3 cr req'd)		**Term Taken**	**Grade**