Graduate Program Guide

FALL 2016
Welcome, new and returning graduate students!

The faculty and staff of the Department of Industrial and Systems Engineering at the University of Wisconsin-Madison are delighted that you have joined us for your graduate studies! Our department is internationally known for its expertise in human factors engineering, health systems engineering, manufacturing and production systems, decision sciences and 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 how it can be applied to improve both industry and the broader society. You’re joining a great department at a great university, and I am confident that you will find lots of opportunities for personal and professional growth here. The faculty, staff, and other students are all happy to help you learn what you want to learn!

Graduate school is a time of increasingly self-directed learning – both inside and outside the classroom. So, take advantage of your time here to meet our faculty members in person, attend our research seminars (on Friday afternoons at 12:00pm), explore work being done in other departments, and generally create a vibrant learning experience that will help you launch the next phase of your life.

Your first stop on the way should be the Student Services Office (Room 3182 of the Mechanical Engineering Building). If you occasionally manage to come up with a question for which they don’t know the answer, they will at least always know how to GET the answer for you! In addition, Prof. Shiyu Zhou (Room 3254) is the associate chair of the department for graduate studies; he can assist you with any academic issues. Each graduate student also has an adviser – please make sure to introduce yourself to your advisor by the third week of the semester. Finally, as department chair, I hold regular office hours for students in my office (Room 3270). You can stop by without an appointment during office hours, or feel free to make an appointment to meet with me at some other time.

Good luck,

Jeff Linderoth
Professor and Chair
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Introduction to the Department of Industrial and Systems Engineering

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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 Campus Information and Visitor Center (CIVC) website at [http://housing.civc.wisc.edu/](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](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/](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 Union South in room 149 and the hours are Monday-Friday 8:30am- 5:00pm. You can find more information at [http://www.wiscard.wisc.edu/](http://www.wiscard.wisc.edu/).

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 ASM Student Print Office in the Student Services Tower on University Ave. If you have any questions you can call them at (608) 262-6216. 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://www.asm.wisc.edu/bus-pass-program-faq/](http://www.asm.wisc.edu/bus-pass-program-faq/).

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.

UW-Madison Events Calendar: [http://www.today.wisc.edu](http://www.today.wisc.edu)
Academics

Important Websites

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<thead>
<tr>
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<th>Website</th>
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<tr>
<td>ISyE Department Website</td>
<td><a href="https://www.engr.wisc.edu/department/industrial-systems-engineering/">https://www.engr.wisc.edu/department/industrial-systems-engineering/</a></td>
</tr>
<tr>
<td>Wendt Commons Library</td>
<td><a href="http://wendt.engr.wisc.edu/library/">http://wendt.engr.wisc.edu/library/</a></td>
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<tr>
<td>International Student Services</td>
<td><a href="http://iss.wisc.edu/">http://iss.wisc.edu/</a></td>
</tr>
<tr>
<td>COE Diversity Affairs Office</td>
<td><a href="http://www.engr.wisc.edu/academics/student-services/diversity-programs/">http://www.engr.wisc.edu/academics/student-services/diversity-programs/</a></td>
</tr>
<tr>
<td>Engineering Career Services</td>
<td><a href="https://www.engr.wisc.edu/academics/student-services/career-services/">https://www.engr.wisc.edu/academics/student-services/career-services/</a></td>
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<tr>
<td>DoIT (Division of Info Tech)</td>
<td><a href="http://it.wisc.edu/">http://it.wisc.edu/</a></td>
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<tr>
<td>CAE (Computer Aided Eng)</td>
<td><a href="http://www.cae.wisc.edu/">http://www.cae.wisc.edu/</a></td>
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<tr>
<td>Wait List Demo</td>
<td><a href="https://kb.wisc.edu/page.php?id=15644">https://kb.wisc.edu/page.php?id=15644</a></td>
</tr>
<tr>
<td>Deadlines At a Glance</td>
<td><a href="https://registrar.wisc.edu/fall_deadlines_at_a_glance.htm">https://registrar.wisc.edu/fall_deadlines_at_a_glance.htm</a></td>
</tr>
<tr>
<td>Academic Calendar</td>
<td><a href="http://www.secfac.wisc.edu/academic-calendar.htm">http://www.secfac.wisc.edu/academic-calendar.htm</a></td>
</tr>
<tr>
<td>University Health Services</td>
<td><a href="http://www.uhs.wisc.edu/">http://www.uhs.wisc.edu/</a></td>
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<tr>
<td>McBurney Disability Center</td>
<td><a href="http://mcburney.wisc.edu/">http://mcburney.wisc.edu/</a></td>
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<tr>
<td>Writing Center</td>
<td><a href="http://writing.wisc.edu/">http://writing.wisc.edu/</a></td>
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<tr>
<td>Grad School Academic Guidelines</td>
<td><a href="http://grad.wisc.edu/acadpolicy/">http://grad.wisc.edu/acadpolicy/</a></td>
</tr>
<tr>
<td>Graduate School Forms</td>
<td><a href="http://grad.wisc.edu/acadpolicy/">http://grad.wisc.edu/acadpolicy/</a></td>
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</table>

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 email 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/](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](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 Student Services 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 email 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 Student Services 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 email 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 email, 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 emailed to Alissa Ewer at the Graduate School (217 Bascom Hall). You can find a demo of the how to submit a course change request at https://registrar.wisc.edu/isis_helpdocs/enrollment_demos/V90CourseChangeRequest/V90CourseChangeRequest.htm.

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, check to see if a wait list is being kept. You can find a demo of the how to use the Wait list System at http://kb.wisc.edu/page.php?id=15644.

If the error message indicates the course pre-requisites have not been met, please email the Student Services for permission to enroll.

If the error message indicates that instructor consent is required, please email 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 toward 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 Michelle Holland, Director of Academic Services at (608) 265-0519 or michelle.holland@wisc.edu.

**Minimum Credit Requirements**

**Fall & Spring:** The minimum credit load to be considered a graduate student at UW-Madison 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 a 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 a RA or TA. During the summer, students who are required to enroll must take at least 2 credits. Students being paid as a PA are not required to enroll for the summer term.

**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

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<thead>
<tr>
<th></th>
<th>Fall/Spring Credit Load</th>
<th>Summer Credit Load</th>
</tr>
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<tbody>
<tr>
<td><strong>General Rule</strong></td>
<td>8-12 cr</td>
<td>4-8 cr</td>
</tr>
<tr>
<td><strong>Dissertators</strong></td>
<td>3 cr</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>Non-dissertator TAs and RAs with 33%&lt;</strong></td>
<td>8 cr</td>
<td>2 cr</td>
</tr>
<tr>
<td><strong>International Students</strong></td>
<td>8-12 cr</td>
<td>not required unless being paid</td>
</tr>
</tbody>
</table>

**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://saa.ls.wisc.edu/credit-overload.htm](http://saa.ls.wisc.edu/credit-overload.htm). 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 toward 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 6 credits 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 uses 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 mandatory, 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 https://www.engr.wisc.edu/academics/student-services/academic-advising/undergraduate-engineering-students/successful-students/ for more information.

**Engineering Career Services (ECS), Office of Student Development**

Engineering Career Services (https://www.engr.wisc.edu/academics/student-services/career-services/) provides lifetime tools for successful career development in a rapidly changing world. ECS helps students prepare for internship/co-op as well as job searches (resume and cover letter writing, listing of potential employers, etc), practice interviewing skills (mock interviews, sample interview questions), and learn 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 once a 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: Julie Rae – jrae@wisc.edu
Telephone: (608) 262-5096
Location: 192 Engineering Drive 1410 Madison, WI 53706

**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 8 to 12 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://www.engr.wisc.edu/academics/student-services/career-services/co-op/ 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:

- providing 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 the 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 provides 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://iss.wisc.edu/.

**Writing Center**
The UW Writing Center (http://writing.wisc.edu/) provides free of charge face-to-face and online consultations that 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 on their own 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://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, note taking support, testing accommodations, and reduced credit load recommendations, to name a few.
Degree Requirements

Master’s Degree Options & Requirements

The ISyE MS graduate program offers two MS degree program options – 1) 30-credit MS Degree in Selected Research Area and 2) 30-credit Professional Fast Track for UW-Madison ISyE undergraduate students. 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.

1) 30-credit MS Option Requirements:

The 30-credit MS Option Requirements vary according to Focus Area:

- Decision Science and Operations Research Planning Grid
- Decision Science and Operations Research Brochure
- Health Systems Engineering Planning Grid
- Health Systems Engineering Brochure
- Human Factors and Ergonomics Planning Grid
- Human Factors and Ergonomics Brochure
- Human Factors and Ergonomics Approved Tools & Methods Courses
- Manufacturing and Production Systems Planning Grid
- Manufacturing and Production Systems Brochure
- Quality Engineering Planning Grid
- Quality Engineering Brochure

For the specific requirements for each Focus Area, please see pages 26-37.

2) 30-credit MS Professional Fast-Track Option Requirements:

30-credit Brochure & Information
30-credit Application

- Students need to identify an area of specialization for their 30-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 and 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. Any course(s) taken as an undergraduate cannot be taken again. Examples include: ISyE 476, 515, 565, 641, 653, 671, 672, or 3cr of 699.

- 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](#).

### Completing Your Master’s Degree

In order to be eligible for graduation, a 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 Student Services will send out an email asking for information from MS students who plan to complete their degree that semester. If you plan to graduate, please respond to this email as soon as possible. MS students who plan to graduate in a given semester must submit two documents to the Student Services 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 Student Services Coordinator will then check the student’s 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 Student Services Coordinator. An email will be sent to the student from the Student Services 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 Student Services 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 30 credits and the other requires 24 credits. The student can overlap 25% of 24 credits which is 6 credits.

**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 a 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 emailed 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 email account will be left active a few months after graduation. You will receive an email notifying you when your account will be deactivated. Once a student has graduated, they can also apply for a UW alumni email 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 PhD 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

Additional Requirements for Human Factors PhD Students

HFE Depth Requirement: The depth requirement for human factors and ergonomics includes both a coursework and exam component.

Course Requirement: To take the qualifying exam, a student will have to have received a grade of AB or better in at least one course in each of the three areas below. Courses taken during undergraduate studies can be used to satisfy this requirement:

a. Cognitive Ergonomics
   UW courses that would qualify: ISyE 549, ISyE 555, ISyE 556, ISyE 559, ISyE 691 (depending on topic), ISyE 699 (depending on topic), ISyE 859 (depending on topic)

b. Sociotechnical Systems / Macroergonomics
   UW courses that would qualify: ISyE 449, ISyE 555, ISyE 556, ISyE 559, ISyE 610, ISyE 652, ISyE 653, ISyE 691 (depending on topic), ISyE 699 (depending on topic), ISyE 753, ISyE 854 (depending on topic)

c. Physical Ergonomics
   UW courses that would qualify: ISyE 555, ISyE 564, ISyE 565, ISyE 662, ISyE 691 (depending on topic), ISyE 699 (depending on topic), ISyE 764

Prior to defending their dissertation, Human Factors PhD students must complete at least six seminar/special topics courses at the 700 level or above totaling a minimum of 12 credits; at least three totaling at least 6 credits of these must be in the Human Factors and Ergonomics area.

Other courses may qualify. Students may submit courses to the HFE Area group for consideration. Transfer students should submit a course syllabus or description and transcript for any courses from other institutions that they would like to have considered for satisfaction of this requirement. The HFE Area group will make this decision.

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 information under ISyE Program Requirements 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. They must then complete a take-home written exam and a 1-hour 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 sure the PhD student achieves 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 choose 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 PhD program can be counted toward this breadth requirement, including courses taken as an undergraduate. Students should submit the course title and syllabus to the Student Services Coordinator who 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 517 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 PhD. The courses should help students in their PhD research preparation. The student must consult the requirements for his or her PhD 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: Requires a minimum of 9 credits of coursework in a single department and approval by that department. Please check with the department for their specific Minor requirements. Some departments require more than 9 credits for a Minor and others have specific course requirements.

Option B: Requires a minimum of 9 credits of courses from one or more than one department. An ISyE course may not be used for the Option B minor, except that a course cross-listed with ISyE may be used if the home department for such course is not ISyE. In addition, the student's advisor must approve the set of courses being used to satisfy the Option B minor. The student must choose a Minor Topic and also submit an attached paragraph to explain how their minor courses relate to their Minor Topic and provide a cohesive minor that will enhance their 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 ISyE website PhD forms page or at in the Student Services Office (3182 ME Building).

Thesis Research and Committee
Attainment of a PhD 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 five 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 fifth 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 on a written proposal and a detailed plan to carry out the PhD 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 PhD 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 32 credits 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.
- Human Factors PhD students must meet the course requirements described on page 15.

Students must request the Preliminary Exam Warrant at least three weeks before the proposed exam date. Preliminary Exam Warrant request forms can be obtained from the Student Services Office (3182 ME).

The ISyE Student Services will then check the student’s GPA, grades and PhD requirements to ensure they have met all the Preliminary requirements. They will then send the Preliminary Warrant Request Form to the Graduate School. Once the Graduate School approves the Preliminary Warrant Request Form, they will send a final Preliminary Warrant back to the Student Services. Students will be contacted via email when the final Preliminary Warrant has arrived from the Graduate School and is ready to be picked up. Students should pick up their final Preliminary Warrant from the Student Services Office and take it to their Prelim to have their committee sign. The final Preliminary Warrant must be dated before the first day of the semester they intend to become a dissertator.

The final Preliminary Warrant requires the signature of the Chair. The Student Services 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 Preliminary 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 3 credits the semester in which they graduate or pay a Degree Completion Fee (which is equivalent to 12 times 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 advisor’s signature, and the Student Services 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 Student Services can assist the student in reserving a room for their defense.

The ISyE Student Services will then check the student’s 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 Student Services. An email will be sent to the student from the Student Services 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, and formatting requirements. 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 Guide to Preparing Your Doctoral Dissertation. 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 a 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 emailed 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 email account will be left active a few months after graduation. You will receive an email notifying you when your account will be deactivated. Once a student has graduated, they can also apply for an UW alumni email 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 Student Services 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 Student Services 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!!!

Stay Connected as a Student and Alumni

Please make sure to stay in touch via the following social media outlets but also feel free to contact our Communications Specialist with stories you want to share about how ISyE has impacted your life and career.

ISyE Facebook and Twitter Pages: Please be sure to like our Facebook page and follow our Twitter feed to stay up-to-date on all that is happening in ISyE. See photos and updates from your favorite faculty members, connect with current and past classmates, share your own ISyE story, and read about how ISyE students, alumni, and faculty are making things better.

- Facebook: https://www.facebook.com/ISyE.UWMadison/?ref=aymt_homepage_panel
- Twitter: https://twitter.com/uwisye
ISyE Alumni and Student LinkedIn Group: This is a great opportunity to stay connected to your classmates and build a professional network through ISyE alumni and students. The UW-Madison ISyE Alumni and Student LinkedIn Group will allow you to search, find, and contact other ISyE alumni and students 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 others 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! https://www.linkedin.com/groups/138818/profile

Additional 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 (http://www.mentornet.net/) to facilitate connections between undergraduate students and interested mentors. Because mentors and students can interact by email, 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? Please see the MentorNet FAQs at http://www.mentornet.net/documents/other/help. 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).
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.htm.

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. Furthermore, 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 https://wendt. engr. wisc. edu/teaching-learning/ tip-neo/. 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 PhD, or has already been awarded a PhD 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://taa-madison.org/rights/](http://taa-madison.org/rights/).

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 in the ISyE Department**
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 per ISyE Department Policy. 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 a 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/](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 [http://iss.wisc.edu/students/current-students/taxes](http://iss.wisc.edu/students/current-students/taxes).
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 and 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 at 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 6:00 a.m. 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 and 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 (3270 ME) or the Department Administrator (3246 ME) 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

**Outgoing 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/](http://www.engr.wisc.edu/ie/current/grad/policy/).
Grievance Procedures

If a student feels unfairly treated or aggrieved by faculty, staff, or another student, the University offers several avenues to resolve the grievance. Student’s concerns about unfair treatment are best handled directly with the person responsible for the objectionable action. If the student is uncomfortable making direct contact with the individual(s) involved, they should contact the advisor or the person in charge of the unit where the action occurred (program or department chair, section chair, lab manager, etc. Many departments and schools/colleges have established specific procedures for handling such situations; check their web pages and published handbooks for information. If such procedures exist at the local level, these should be investigated first. For more information, see the College of Engineering Policies and Procedures: https://www.engr.wisc.edu/academics/student-services/academic-advising/policies-and-procedures/

And the Graduate School Academic Policies & Procedures: Grievances & Appeals: https://grad.wisc.edu/acadpolicy/#grievancesandappeals

Procedures for proper accounting of student grievances against ISyE faculty, staff, or students:

1. The student is encouraged to speak first with the person toward whom the grievance is directed to see if a situation can be resolved at this level.
2. Should a satisfactory resolution not be achieved, the student should contact the program’s Grievance Advisor, Professor Nick Hitchon, to discuss the grievance. The Grievance Advisor will facilitate problem resolution through informal channels and facilitate any complaints or issues of students. The first attempt is to help students informally address the grievance prior to any formal complaint. Students are also encouraged to talk with their faculty advisors regarding concerns or difficulties, if necessary. University resources for sexual harassment, discrimination, disability accommodations, and other related concerns can be found on the UW Office of Equity and Diversity website: http://www.oed.wisc.edu/index.html.
3. Other campus resources include:
   - The Graduate School – grad.wisc.edu
   - McBurney Disability Resource Center – mcburney.wisc.edu
   - Employee Assistance Office – eao.wisc.edu
   - Ombuds Office – ombuds.wisc.edu
   - University Health Services - uhs.wisc.edu
4. If the issue is not resolved to the student’s satisfaction, the student can submit the grievance to the Grievance Advisor in writing, within 60 calendar days of the alleged unfair treatment.
5. On receipt of a written complain, a faculty committee will obtain a written response from the person filing the grievance.
6. The faculty committee will determine a decision regarding the grievance. The Grievance Advisor will report on the action taken by the committee in writing to both the student and the party toward whom the complaint was directed within 15 working days from the date the complaint was received.
7. At this point, if either party (the student or the person toward whom the grievance is directed) is unsatisfied with the decision of the faculty committee, the party may file a written appeal. Either party has 10 working days to file a written appeal to the School/College.
8. Documentation of the grievance will be stored for at least 7 years. Significant grievances that set a precedent will be stored indefinitely.

The Graduate School has procedures for students wishing to appeal a grievance decision made at the school/college level. These policies are described in the Graduate School’s Academic Policies and Procedures: https://grad.wisc.edu/acadpolicy/#grievancesandappeals
Policy on Sexual Harassment

Sexual harassment is a community concern. When sexual harassment occurs, it degrades the quality of work and education at the University of Wisconsin-Madison. It erodes the dignity and productivity of the individuals involved and diminishes the quality, effectiveness, and stature of the institution. It can occur in any university setting (an office, a classroom, a university program). Each of us has a collective responsibility not to harass others and to act responsibly when confronted by the issue of sexual harassment, thereby promoting an environment that better supports excellence in teaching, research, and service. (Taken from: http://www.oed.wisc.edu/sexualharassment/index.html)

What is Sexual Harassment?

Unwelcome sexual advances, requests for sexual favors, and verbal or physical conduct of a sexual nature constitute sexual harassment when submission to such conduct is a condition of employment, academic progress, or participation in a university program; or submission to or rejection of such conduct influences employment, academic or university program decisions; or the conduct interferes with an employee’s work or a student’s academic career, or creates an intimidating, hostile, or offensive working, learning, or program environment.

Key Points about Sexual Harassment

- Differences in power or status can be a significant component in sexual harassment. A person who seems to acquiesce to sexual conduct may still experience tangible action harassment or hostile environment harassment if the conduct is unwelcome.
- Harassment can occur between men and women or between members of the same gender.
- Sexual harassment may or may not involve a tangible injury (e.g., economic loss, lowered grades). A sexually harassing environment, in and of itself, may constitute a harm.
- Individuals in positions of authority are responsible for ensuring that employees, students or others do not harass. In an academic or program setting, offenders can be faculty, instructors, lecturers, teaching assistants, coaches, tutors, or fellow students or program participants.
- The person filing a sexual harassment charge does not have to be the person harassed but could be anyone significantly harmed by the harassing conduct.
- Some behavior that is not in violation of university policy may, nonetheless, be unprofessional under the circumstances. Consequences of such unprofessional behavior may include poor performance evaluations or possible discipline.

What to do if you feel you’ve been sexually harassed:

- Seek advice. Consult your department chair, another divisional resource person, the Office of Equity and Diversity (http://www.oed.wisc.edu/), or another campus resource to discuss options for resolution.
- You may choose to seek informal resolution or file a sexual harassment complaint. You may find more information on filing a complaint at http://www.oed.wisc.edu/dishar.html
- For additional information, please visit: http://www.oed.wisc.edu/sexualharassment/do.html

For more information on discrimination against students and other resources:

- Cases of suspected child abuse and/or neglect: http://oed.wisc.edu/documents/UW-Madison_Policy_on_Child_Abuse_and_Neglect.pdf
Application for MSIE / INDUSTRIAL ENGINEERING MS Degree (30 cr) 
PROFESSIONAL FAST TRACK OPTION (Fall 2014 and beyond)

Name

Campus ID

Area of Specialization (optional)

Faculty Advisor (Print Name)

Please attach a brief statement of purpose explaining how the courses listed below provide a cohesive program related to the student’s area of specialization.

<table>
<thead>
<tr>
<th>Dept &amp; Catalog #</th>
<th>Course Name</th>
<th># of Credits</th>
<th>Check 15cr in ISYE**</th>
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<tbody>
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</table>

ISyE Undergraduate Coursework Towards Program - up to 6 credits of 300+ course level

Project Course:

Examples of Required Project Course include: ISYE 476, 515, 565, 641, or 3cr 699-Independent Study related to area of specialization.

<table>
<thead>
<tr>
<th>FACULTY ADVISOR</th>
<th>PLEASE PRINT NAME</th>
<th>SIGNATURE</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ac. Affairs Comm. Chair</td>
<td>Signature:</td>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

** 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 and at most only one 300 level course can be used to fulfill degree requirements. (Any course below the 300 level will not count towards a graduate degree.)

This form MUST be filled out completely with statement of purpose attached and submitted to the Industrial & Systems Engineering Department Student Services Office (3182 ME Bldg.)

Students MUST additionally 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 (DS/OR)**

**STUDENT NAME:** ________________________________  **CAMPUS ID#:** ________________  **DATE:** __________

**ADVISOR NAME:** ________________________________  **ADVISOR SIGNATURE:** ________________________________

**GRADUATION YEAR:** ________________  **SEMESTER:** Fall____ Spring____ Summer____

Cont. on for PhD?  Yes  No  Degree Requirements Confirmed (office use only)________________________

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**MS Degree Requirements: 30 degree credits total**

**BROAD CORE COURSES (12 credits; select one course from each category)**

<table>
<thead>
<tr>
<th>Optimization</th>
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<td>ISyE 524</td>
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<tr>
<td>Introduction to Optimization</td>
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<tr>
<td>ISyE 525</td>
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<tr>
<td>Linear Programming Methods</td>
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<thead>
<tr>
<th>Probability and stochastic modeling</th>
<th>Term Taken</th>
<th>Grade</th>
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<tr>
<td>ISyE 624</td>
<td></td>
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<tr>
<td>Stochastic Modeling Techniques</td>
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<tr>
<td>ISyE 632</td>
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<tr>
<td>Introduction to Stochastic Modeling</td>
<td></td>
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<tr>
<td>ISyE 643</td>
<td></td>
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<tr>
<td>Performance Analysis of Manufacturing Systems</td>
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<table>
<thead>
<tr>
<th>Simulation</th>
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<tr>
<td>ISyE 620</td>
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<tr>
<td>Simulation Modeling and Analysis</td>
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<table>
<thead>
<tr>
<th>Statistics and decision analysis</th>
<th>Term Taken</th>
<th>Grade</th>
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<tbody>
<tr>
<td>ISyE 512</td>
<td></td>
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<tr>
<td>Inspection, Quality Control, and Reliability</td>
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<tr>
<td>ISyE 516</td>
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<tr>
<td>Introduction to Decision Analysis</td>
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<tr>
<td>ISyE 575*</td>
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<tr>
<td>Introduction to Quality Engineering</td>
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<tr>
<td>Stat 424*</td>
<td></td>
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<tr>
<td>Statistical Experimental Design for Engineers</td>
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**TRACK CORE COURSES (6 credits; select two courses)**

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<thead>
<tr>
<th>(Additional) BROAD CORE courses my fulfill this requirement</th>
<th>Term Taken</th>
<th>Grade</th>
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<tr>
<td>ISyE 425</td>
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<tr>
<td>Introduction to Combinatorial Optimization</td>
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<tr>
<td>ISyE 513</td>
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<tr>
<td>Analysis of Capital Investments</td>
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<tr>
<td>ISyE 517</td>
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<tr>
<td>Decision Making in Health Care</td>
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<tr>
<td>ISyE 633</td>
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<tr>
<td>Queuing Theory and Stochastic Modeling</td>
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<tr>
<td>ISyE 719</td>
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<tr>
<td>Stochastic Programming</td>
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<tr>
<td>ISyE 720</td>
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<tr>
<td>Integer Programming</td>
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<tr>
<td>ISyE 723</td>
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<tr>
<td>Dynamic Programming and Associated Topics</td>
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<tr>
<td>ISyE 726</td>
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<tr>
<td>Nonlinear Programming Theory and Applications</td>
<td></td>
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<tr>
<td>ISyE 727</td>
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<tr>
<td>Convex Analysis</td>
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<tr>
<td>ISyE 730</td>
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<tr>
<td>Nonlinear Programming Algorithms</td>
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*Only one of ISyE 575 and Stat 424 may count toward the MS degree.*

*Please complete & return to Student Services, 3182 ME Bldg. & request a final MS degree warrant at the beginning of the last semester of your graduate program!*
EXIT REQUIREMENTS

In order to be eligible for graduation, a Master's student must:

- Have a GPA of 3.0 or higher
- Meet all MS degree requirements for their focus area
- Have all grades entered, except for the current semester. No Incomplete (I's) or No Report (NRs) grades can show on the student's transcript.
- Be enrolled in at least 2 credits the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadlines

JOB PLACEMENT

Engineering Career Services Office
Suite 170, 1410 Engineering Drive (CAE)
Madison, WI 53706
Tel: (608) 262-3471
FAX: (608) 262-7262
https://www.engr.wisc.edu/academics/student-services/career-services/

FURTHER INFORMATION

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
https://www.engr.wisc.edu/department/industrial-systems-engineering/

Please complete & return to Student Services, 3182 ME Bldg. & request a final MS degree warrant at the beginning of the last semester of your MS degree graduate program!

Updated 5.17.16
ISyE MS REQUIREMENTS:  Health Systems Engineering Research Area (HSE)  
(5/16 & Beyond)

STUDENT NAME: __________________________  CAMPUS ID#: ______________  DATE: ____________

ADVISOR NAME: __________________________  ADVISOR SIGNATURE: __________________________

GRADUATION YEAR: ______________  SEMESTER: Fall____ Spring____ Summer____

Cont. on for PhD?  Yes No

Degree Requirements Confirmed (office use only)____________________________

<table>
<thead>
<tr>
<th>MS Degree Requirements: 30 degree credits total</th>
<th>Term Taken</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Foundation Courses (6 cr min)</td>
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<tr>
<td>ISyE 517 Decision Making in Health Care</td>
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<tr>
<td>ISyE 617 Health Information Systems</td>
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<tr>
<td>ISyE 601 Stochastic Models in Production and Healthcare Systems</td>
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<tr>
<td>Quality and Safety: ISyE 555 or 559 or 608 or 703</td>
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<tr>
<td>Statistics and Research Methods (6 cr min)</td>
<td>Term Taken</td>
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<tr>
<td>Ed Psych 711 Hierarchical Linear Modeling</td>
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<td>Ed Psych 862 Multivariate Analysis</td>
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<tr>
<td>Psych 610 Statistical Analysis of Psychological Experiments</td>
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<td>Psych 710 Multiple Regression</td>
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<td>Stat 333 Applied Regression Analysis</td>
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<td>Stat 424* Statistical Experimental Design for Engineers</td>
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<tr>
<td>Stat 571 Statistics for Biosciences</td>
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<tr>
<td>Stat 641 Statistical methods for clinical trials</td>
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<tr>
<td>Stat 701 Applied Time Series Analysis, Forecasting &amp; Control I</td>
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<tr>
<td>ISyE 601 Fundamentals of Industrial Data Analytics</td>
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<tr>
<td>ISyE Tools (6 cr min)</td>
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<tr>
<td>ISyE 513 Capital Investment Analysis</td>
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<tr>
<td>ISyE 515 Engr Management</td>
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<tr>
<td>ISyE 516 Introduction to Decision Analysis</td>
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<tr>
<td>ISyE 601 ** (e.g., Special Topics: Long Term Care)** Topic MUST BE approved IN ADVANCE by advisor</td>
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<tr>
<td>ISyE 620 Discrete Event Simulation</td>
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<td>ISyE 624 Stochastic Modeling</td>
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<td>ISyE 633 Queuing Theory</td>
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<tr>
<td>ISyE 652 Sociotechnical Systems</td>
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<tr>
<td>ISyE 653 Job and Organizational Design</td>
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<tr>
<td>ISyE 662 Design and Human Disability and Aging</td>
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<td>ISyE 723 Dynamic Programming</td>
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<td>ISyE 729 Behavioral Analysis of Management Decision Making</td>
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<tr>
<td>ISyE 816 Special Topics in Ind Engr **Topic MUST BE approved IN ADVANCE by advisor</td>
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<tr>
<td>CONCENTRATION AREA (6 cr min in one area)</td>
<td>Term Taken</td>
<td>Grade</td>
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<td>Area 1: Health Outcomes &amp; Evaluation</td>
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<tr>
<td>Nurs 761 Health Program Planning, Eval &amp; Quality Improvement</td>
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<tr>
<td>PHS 797 Introduction to Epidemiology</td>
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<tr>
<td>PHS 875 Assessment of Medical Technologies** - MUST BE approved IN ADVANCE by advisor</td>
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<tr>
<td>PHS 876 Measuring Health Outcomes</td>
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### Area 2: Quality/Safety

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ISyE 555</td>
<td>Human Performance and Accident Causation</td>
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<tr>
<td>ISyE 559</td>
<td>Patient Safety and Error Reduction in Healthcare</td>
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<tr>
<td>ISyE 575</td>
<td>Introduction to Quality Engineering</td>
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<tr>
<td>ISyE 608</td>
<td>Safety and Quality in the Medication Use System</td>
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</tr>
<tr>
<td>ISyE 703</td>
<td>Quality of Health Care: Evaluation and Assurance</td>
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<tr>
<td>ISyE 854</td>
<td>Safety Theory (offered occasionally)</td>
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### Area 3: Production Processes in Health Care

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<tr>
<td>ISyE 515</td>
<td>Engr Management</td>
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<tr>
<td>ISyE 601</td>
<td>Stochastic Models for Production and Health Care System</td>
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<tr>
<td>ISyE 615</td>
<td>Production Systems Control</td>
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<tr>
<td>ISyE 643</td>
<td>Performance Analysis of Manufacturing Systems</td>
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<tr>
<td>OTM 753</td>
<td>Health Care Management</td>
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### Area 4: Informatics

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<tbody>
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<td>ISyE 575</td>
<td>Introduction to Quality Engineering</td>
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</tr>
<tr>
<td>ISyE 617</td>
<td>Health Information System</td>
<td></td>
</tr>
<tr>
<td>ISyE 671</td>
<td>E-Business: Technologies, Strategies and Applications</td>
<td></td>
</tr>
<tr>
<td>BMI 576</td>
<td>Introduction to Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>BMI 773</td>
<td>Clinical Research Informatics</td>
<td></td>
</tr>
<tr>
<td>BMI 776</td>
<td>Advanced Bioinformatics</td>
<td></td>
</tr>
</tbody>
</table>

Electives (6 Credits): Any of the courses in the concentration areas. Other courses **MUST** be approved (in writing) in advance by the student’s advisor.

---

**EXIT REQUIREMENT**

*In order to be eligible for graduation, a Master’s student must:

- Have a GPA of 3.0 or higher
- Meet all MS degree requirements for their focus area
- Have all grades entered, except for the current semester. No Is or NRs can show on the student’s transcript.
- Be enrolled in at least 2cr the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadline.

**HEALTH SYSTEMS LABS & CENTERS**

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Quality and Productivity Improvement</td>
<td>Engineering Career Services Office</td>
</tr>
<tr>
<td>Center for Health Systems Research and Analysis</td>
<td>Suite 170, 1410 Engineering Drive (CAE)</td>
</tr>
<tr>
<td>CHESS Center for Health Enhancement and Social Support</td>
<td>Madison, WI 53706</td>
</tr>
<tr>
<td>Health Systems Laboratory</td>
<td>Tel: (608) 262-3471</td>
</tr>
<tr>
<td>Sociotechnical Engineering Laboratory</td>
<td>FAX: (608) 262-7262</td>
</tr>
<tr>
<td>Living Environments Laboratory in the Wisconsin Institute for Discovery</td>
<td><a href="https://www.engr.wisc.edu/academics/student-services/career-services/">https://www.engr.wisc.edu/academics/student-services/career-services/</a></td>
</tr>
</tbody>
</table>

**FURTHER INFORMATION**

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
https://www.engr.wisc.edu/department/industrial-systems-engineering/
Please complete & return to Student Services, 3182 ME Bldg. & request a final MS degree warrant at the beginning of the last semester of your graduate program!

ISyE MS REQUIREMENTS: Human Factors & Ergonomics Engineering (HF&E)

STUDENT NAME: __________________________ CAMPUS ID#: ____________ DATE: ____________

ADVISOR NAME: __________________________ ADVISOR SIGNATURE: __________________________

GRADUATION YEAR: ________________ SEMESTER: Fall____ Spring____ Summer____

Cont. on for PhD? Yes No Degree Requirements Confirmed (office use only) __________________________

<table>
<thead>
<tr>
<th>TOTAL: 30 credits required</th>
</tr>
</thead>
</table>

(ISyE Graduate Chair)
TOTAL: 30 Credits Required

- ISYE 349 Introduction to Human Factors or equivalent is required. It is a prerequisite for all other Human Factors 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 are 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 IE 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)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 552 Human Factors Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 555 Human Performance &amp; Accident Causation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE/ME 564 Occupational Ergonomics and Biomechanics</td>
<td></td>
<td></td>
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<tr>
<td>ISyE 565 Ergonomics in Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 662 Design for Human Disability &amp; Aging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 764 Occupational Biomechanics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 601/602/699*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 854/859/961*</td>
<td></td>
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</table>

1. Physical Ergonomics (3cr min)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 552 Human Factors Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 555 Human Performance &amp; Accident Causation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 556 Occupational Safety &amp; Health Engineering</td>
<td></td>
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</tr>
<tr>
<td>ISyE/ME 559 Patient Safety &amp; Error Reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE 601/602/699*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE 854/859/961*</td>
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</table>

2. Cognitive Ergonomics (3cr min)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 552 Human Factors Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 555 Human Performance &amp; Accident Causation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 556 Occupational Safety &amp; Health Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE/ME 559 Patient Safety &amp; Error Reduction</td>
<td></td>
<td></td>
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<tr>
<td>IE 601/602/699*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE 854/859/961*</td>
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<td></td>
</tr>
</tbody>
</table>

3. Macroergonomics (3cr min)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 552 Human Factors Design and Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 555 Human Performance &amp; Accident Causation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 556 Occupational Safety &amp; Health Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE/ME 559 Patient Safety &amp; Error Reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 610 Design of Program Evaluation Systems</td>
<td></td>
<td></td>
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<tr>
<td>ISyE/PSYCH 652 Sociotechnical Systems</td>
<td></td>
<td></td>
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<tr>
<td>ISyE/PSYCH 653 Organization &amp; Job Design</td>
<td></td>
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</tr>
<tr>
<td>ISyE 753 Seminar in Organization &amp; Job Design</td>
<td></td>
<td></td>
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<tr>
<td>ISyE 756 Seminar in Technology &amp; Society</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE 601/602/699*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE 854/859/961*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


5. Master’s Project Requirement ** See backside (3-6cr min)

6. Elective (3 cr max)

TOTAL: 30 Credits Required
On a yearly basis, the HFE faculty group will update the list of Tools and Methods courses, which can be found at https://www.engr.wisc.edu/app/uploads/2016/03/FACT-SHEET-TOOLS-and-METHODS-HFE.pdf. 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

*You may count multiple ISYE 601, 602, 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.

**MS PROJECT or THESIS CREDITS UNDER ISyE 699 Ind Study OR ISyE 790 Research/ 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.

---

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---

**JOB PLACEMENT**

Engineering Career Services Office (ECS)  
Suite 170, 1410 Engineering Drive (CAE)  
Madison, WI 53706  
Tel: (608) 262-3471  
Fax: (608) 262-7262  
https://www.engr.wisc.edu/academics/student-services/career-services/

---

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& request a final MS degree warrant  
at the beginning of the last semester of your MS degree graduate program!
**ISyE MS REQUIREMENTS: Manufacturing & Production Systems Area (MPS)**

STUDENT NAME: ___________________________ CAMPUS ID#: __________________ DATE: __________

ADVISOR NAME: ___________________________ ADVISOR SIGNATURE: _______________________

GRADUATION YEAR: ___________ SEMESTER: Fall____ Spring____ Summer____

Cont. on for PhD? Yes No Degree Requirements Confirmed (office use only)____________________________

(ISyE Graduate Chair)

*Only one of ISyE 575 and Stat 424 may count toward the MS degree.

**MS Degree Requirements: 30 degree credits total**

**BROAD CORE COURSES (12 credits; select one course from each category)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimization</td>
<td>ISyE 525</td>
<td>Linear Programming Methods</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>ISyE 524</td>
<td>Introduction to Optimization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability and stochastic modeling</td>
<td>ISyE 624</td>
<td>Stochastic Modeling Techniques</td>
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<tr>
<td></td>
<td>ISyE 632</td>
<td>Introduction to Stochastic Modeling</td>
<td></td>
<td></td>
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<td></td>
<td>ISyE 643</td>
<td>Performance Analysis of Manufacturing Systems</td>
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<tr>
<td>Simulation</td>
<td>ISyE 620</td>
<td>Simulation Modeling and Analysis</td>
<td></td>
<td></td>
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<tr>
<td>Statistics and decision analysis</td>
<td>ISyE 512</td>
<td>Inspection, Quality Control, and Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISyE 516</td>
<td>Introduction to Decision Analysis</td>
<td></td>
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<tr>
<td></td>
<td>ISyE 575*</td>
<td>Introduction to Quality Engineering</td>
<td></td>
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<tr>
<td></td>
<td>Stat 424*</td>
<td>Statistical Experimental Design for Engineers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TRACK CORE COURSES (6 credits; select two courses)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 510</td>
<td>Facilities Planning</td>
<td></td>
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</tr>
<tr>
<td>ISyE 605</td>
<td>Computer Integrated Manufacturing</td>
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<td></td>
</tr>
<tr>
<td>ISyE 615</td>
<td>Production Systems Control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TECHNICAL ELECTIVE COURSES (12 credits; At least 6 credits must be ISyE courses or cross-listed with ISyE; must be 400 level or above; at most 6 credits of independent study courses can be used)**

Sample Electives:
- Any courses listed above in ISyE
- Courses in ISyE, such as 415, 425, 449, 515, 612, 641, 658, 671, and others
- Courses in Engineering, Sciences, Mathematics, Statistics, Business, Computer Sciences, Economics, Population Health Sciences, or Psychology, if approved by the advisor

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE____</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE____</td>
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<td></td>
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</table>

**Please complete & return to Student Services, 3182 ME Bldg. & request a final MS degree warrant at the beginning of the last semester of your MS degree graduate program!**
EXIT REQUIREMENTS

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FURTHER INFORMATION

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Madison, WI  53706-1572
Tel: (608) 262-2686
FAX: (608) 262-8454
Email: ie-admission@engr.wisc.edu
https://www.engr.wisc.edu/department/industrial-systems-engineering/

Please complete & return to Student Services, 3182 ME Bldg. & request a final MS degree warrant at the beginning of the last semester of your MS degree graduate program!
### ISYE MS REQUIREMENTS: Quality Engineering Research Area (QE)

**STUDENT NAME:** ________________________  **CAMPUS ID#:** _______________  **DATE:** ____________

**ADVISOR NAME:** ________________________  **ADVISOR SIGNATURE:** ________________________

**GRADUATION YEAR:** _______________  **SEMESTER:** Fall____  Spring____  Summer____

**Cont. on for PhD?**  Yes  No  **Degree Requirements Confirmed (office use only)** _______________

#### FOUNDATION COURSES (All Required—12 cr)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE/ME 512 (or ISyE 612)</td>
<td>Inspection, Quality Control, and Reliability</td>
<td></td>
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</tr>
<tr>
<td>ISyE 515</td>
<td>Engineering Mgmt of Cont Process Improvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 520</td>
<td>Quality Assurance Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 575*</td>
<td>Introduction to Quality Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE 412</td>
<td>Fundamental Industrial Data Analytics</td>
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<td></td>
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</tbody>
</table>

**Auth Substitution**

#### ORGANIZATIONAL DYNAMICS/CHANGE & SOCIOTECHNICAL SYSTEMS (6 cr min)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE/Psych 652</td>
<td>Sociotechnical Systems</td>
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<td></td>
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<tr>
<td>ISyE/Psych 653</td>
<td>Organization and Job Design</td>
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<tr>
<td>ISyE/Psych 753</td>
<td>Seminar in Organization &amp; Job Design</td>
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<tr>
<td>ISyE 854</td>
<td>Special Topics in Organizational Design</td>
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<tr>
<td>MHR 700</td>
<td>Organizational Behavior</td>
<td></td>
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<tr>
<td>OTM 770</td>
<td>Intro to Quality &amp; Prod Improv (Double count)</td>
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**Auth Substitution**

#### STATISTICAL METHODS (3 cr min)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISyE 612</td>
<td>Information Sensing &amp; Data Analysis for Manufacturing</td>
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<tr>
<td>STAT 333</td>
<td>Applied Regression Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 349</td>
<td>Introduction to Time Series</td>
<td></td>
<td></td>
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<tr>
<td>STAT 411</td>
<td>Introduction to Sample Survey Theory and Methods</td>
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<td></td>
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<tr>
<td>STAT 421</td>
<td>Applied Categorical Data Analysis</td>
<td></td>
<td></td>
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<tr>
<td>STAT 701</td>
<td>Applied Time Series Analysis—Forecasting and Control</td>
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<tr>
<td>STAT 756</td>
<td>Multivariate Analysis</td>
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<tr>
<td>STAT 803</td>
<td>Experimental Design I</td>
<td></td>
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<tr>
<td>STAT 849</td>
<td>Theory and Appl of Regression &amp; Analysis of Variance I</td>
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**Auth Substitution**

#### IE ELECTIVES (3 cr min)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term Taken</th>
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<tbody>
<tr>
<td>ISyE 417</td>
<td>Health Systems Engineering</td>
<td></td>
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<tr>
<td>ISyE/ME 513</td>
<td>Analysis of Capital Investments</td>
<td></td>
<td></td>
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<tr>
<td>ISyE 601</td>
<td>Special Topics in ISYE (Advisor consent required prior)</td>
<td></td>
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</tr>
<tr>
<td>ISyE 610</td>
<td>Design of Program Evaluation Systems</td>
<td></td>
<td></td>
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<tr>
<td>ISyE 613</td>
<td>Systems Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISyE/OTM 620</td>
<td>Simulation Modeling &amp; Analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**ISyE 641** Design & Analysis of Mfg Systems (Double count)

**ISyE 658/OTM 758** Managing Technological Change in Mfg Systems

**ISyE 946** Adv Topics Mfg Sys: Diag & Control of Q in Lg Mfg Sys

**Auth Substitution**

<table>
<thead>
<tr>
<th>BUSINESS ELECTIVES (3 cr min)</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INDEPENDENT STUDY (3 cr req'd)</th>
<th>Term Taken</th>
<th>Grade</th>
</tr>
</thead>
</table>

*Only one of ISyE 575 and Stat 424 may count toward the MS degree

**ISyE 699 I INDEPENDENT STUDY (3 cr required)**

Three independent study credits approved in advance by the student’s advisor are required. Independent study or an actual quality improvement project from an industrial, health, or service area is required for the 3 credits.

---

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- Be enrolled in at least 2 credits the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadline.

The requirements for the Ph.D. degree include a minimum number of 32 credits, and include research in area of specialization, satisfactory performance in the Qualifying Exam, the Preliminary Exam, and a successful defense of a Ph.D. thesis. Admission and GPA requirements are the same as those specified by the ISyE Department.

---

**JOB PLACEMENT**

Engineering Career Services Office (ECS)
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Madison, WI 53706
Tel: (608) 262-3471
FAX: (608) 262-7262

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Updated 5.18.16