Undergraduate Student Handbook

Curriculum Effective Fall 2020
Industrial and Systems Engineering
Effective for Students Entering ISyE Fall 2020 or Later

<table>
<thead>
<tr>
<th>Basic Science (9 Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAT&amp;PHY 335</td>
</tr>
<tr>
<td>BIO/BOT/ZOO 151</td>
</tr>
<tr>
<td>BIO/BOT/ZOO 152</td>
</tr>
<tr>
<td>BMOLCHEM 314</td>
</tr>
<tr>
<td>CHEM 103</td>
</tr>
<tr>
<td>CHEM 104</td>
</tr>
<tr>
<td>CHEM 109</td>
</tr>
<tr>
<td>CHEM 311</td>
</tr>
<tr>
<td>CHEM 115</td>
</tr>
<tr>
<td>CHEM 116</td>
</tr>
<tr>
<td>CHEM 327</td>
</tr>
<tr>
<td>CHEM 329</td>
</tr>
<tr>
<td>CHEM 341</td>
</tr>
<tr>
<td>CHEM 342</td>
</tr>
<tr>
<td>CHEM 343</td>
</tr>
<tr>
<td>CHEM 344</td>
</tr>
<tr>
<td>CHEM 345</td>
</tr>
<tr>
<td>CHEM 346</td>
</tr>
<tr>
<td>MATH/ISYE/OTM/STAT 632</td>
</tr>
</tbody>
</table>

Credit will not be given for both CHEM 103 General Chem. I and CHEM 109 Advanced General Chem. to fulfill Mathematics and Basic Science requirements.

<table>
<thead>
<tr>
<th>Computer Science Elective: Select one of the following</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP SCI 200</td>
</tr>
<tr>
<td>COMP SCI 300</td>
</tr>
<tr>
<td>COMP SCI 320</td>
</tr>
<tr>
<td>COMP SCI 412</td>
</tr>
<tr>
<td>COMP SCI 400</td>
</tr>
</tbody>
</table>
### ISYE FOCUS AREA

<table>
<thead>
<tr>
<th>Engineering Analytics and Operations Research</th>
<th>Manufacturing and Supply Chain Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISYE 412 Fundamentals of Industrial Data Analytics</td>
<td>ISYE 415 Introduction to Manufacturing Systems, Design and Analysis</td>
</tr>
<tr>
<td>ISYE/CS/MATH 425 Introduction to Combinatorial Optimization</td>
<td>ISYE/M E 510 Facilities Planning</td>
</tr>
<tr>
<td>ISYE/CIV ENGR/N E 460 Uncertainty Analysis for Engineers</td>
<td>ISYE/M E 512 Inspection, Quality Control and Reliability</td>
</tr>
<tr>
<td>ISYE/M E 513 Analysis of Capital Investments</td>
<td>ISYE 515 Engineering Management of Continuous Process Improvement</td>
</tr>
<tr>
<td>ISYE 516 Introduction to Decision Analysis</td>
<td>ISYE 520 Quality Assurance Systems</td>
</tr>
<tr>
<td>ISYE/CS/E C E 524 Introduction to Optimization</td>
<td>ISYE 575 Introduction to Quality Engineering</td>
</tr>
<tr>
<td>ISYE/CS/MATH/STAT 525 Linear Optimization</td>
<td>ISYE 604 Special Topics in Manufacturing and Supply Chain Management</td>
</tr>
<tr>
<td>ISYE/CS 526 Advanced Linear Programming</td>
<td>ISYE 605 Computer Integrated Manufacturing</td>
</tr>
<tr>
<td>ISYE/CS/M E 558 Introduction to Computational Geometry</td>
<td>ISYE 612 Information Sensing and Analysis for Manufacturing Processes</td>
</tr>
<tr>
<td>ISYE/N E 574 Methods for Probabilistic Risk Analysis of Nuclear Power Plants</td>
<td>ISYE 615 Production Systems Control</td>
</tr>
<tr>
<td>ISYE 603 Special Topics in Engineering Analytics and Operations Research</td>
<td>ISYE/M E 641 Design and Analysis of Manufacturing Systems</td>
</tr>
<tr>
<td>ISYE 620 Simulation Modeling and Analysis</td>
<td>ISYE/M E 643 Performance Analysis of Manufacturing Systems</td>
</tr>
<tr>
<td>ISYE 624 Stochastic Modeling Techniques</td>
<td>ISYE 645 Engineering Models for Supply Chains</td>
</tr>
<tr>
<td>ISYE/MATH/OTM/STAT 632 Introduction to Stochastic Processes</td>
<td></td>
</tr>
<tr>
<td>ISYE/MATH/OTM 633 Queuing Theory and Stochastic Modeling</td>
<td></td>
</tr>
</tbody>
</table>

### Health Care Systems Engineering

<table>
<thead>
<tr>
<th>ISYE 417 Health Systems Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISYE 517 Decision Making in Health Care</td>
</tr>
<tr>
<td>ISYE 557 Human Factors Engineering for Healthcare Systems</td>
</tr>
<tr>
<td>ISYE/MED PHYS 559 Patient Safety and Error Reduction in Healthcare</td>
</tr>
<tr>
<td>ISYE 606 Special Topics in Healthcare Systems Engineering</td>
</tr>
<tr>
<td>ISYE/PHARM 608 Safety and Quality in the Medication Use System</td>
</tr>
<tr>
<td>ISYE/B M I 617 Health Information Systems</td>
</tr>
</tbody>
</table>

### General Industrial Engineering

Choose 6 courses in at least 3 of the 4 areas listed above

### Human Factors

<table>
<thead>
<tr>
<th>ISYE/CS/DS 518 Wearable Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISYE/PSYCH 549 Human Factors Engineering</td>
</tr>
<tr>
<td>ISYE 552 Human Factors Engineering Design and Evaluation</td>
</tr>
<tr>
<td>ISYE 555 Human Performance and Accident Causation</td>
</tr>
<tr>
<td>ISYE 557 Human Factors Engineering for Healthcare Systems</td>
</tr>
<tr>
<td>ISYE/B M E 564 Occupational Ergonomics and Biomechanics</td>
</tr>
<tr>
<td>ISYE 602 Special Topics in Human Factors</td>
</tr>
<tr>
<td>ISYE/PSYCH 652 Sociotechnical Systems</td>
</tr>
<tr>
<td>ISYE/PSYCH 653 Organization and Job Design</td>
</tr>
<tr>
<td>ISYE/B M E 662 Design and Human Disability and Aging</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

I. ISyE CURRICULUM FLOWCHART .......................................................................................................... 2
II. TABLE OF CONTENTS ............................................................................................................................ 6
III. INTRODUCTION TO INDUSTRIAL & SYSTEMS ENGINEERING at UW-MADISON
    Important Contact Information ............................................................................................................ 7
    Overview ............................................................................................................................................... 9
    Department Educational Mission, Vision & Guiding Principles .......................................................... 10
    Educational Objectives ........................................................................................................................ 11
    Educational Outcomes ........................................................................................................................ 12
IV. ISyE CURRICULUM (the GUIDE), General Rules & Regulations .................................................. 13
V. ISyE GENERAL INFORMATION
    Advising .............................................................................................................................................. 14
    Resources & Policies for Personal Conduct and Care ........................................................................... 15
    Additional Academic Resources .......................................................................................................... 16
    Degree Audit Reporting System (DARS) ............................................................................................. 16
    Scholarships ........................................................................................................................................ 16
    Tutoring & Academic Assistance ......................................................................................................... 17
    International Student Services (ISS) .................................................................................................... 18
    CoE Transfer Services .......................................................................................................................... 19
VI. ENHANCING YOUR EDUCATIONAL & PROFESSIONAL EXPERIENCE
    Wendt Commons ................................................................................................................................ 20
    Certificate Programs in the College of Engineering ............................................................................ 21
    Engineering Cooperative Education and Summer Intern Program .................................................... 21
    Engineering Study Abroad ................................................................................................................... 23
    IESP ...................................................................................................................................................... 23
    International Engineering Certificate .................................................................................................. 23
    IAP ....................................................................................................................................................... 24
    Other UW-Madison Study Abroad Experiences .................................................................................. 24
    Student Organizations ........................................................................................................................ 25
VII. PREPARING FOR THE NEXT STEP
    Engineering Career Services ................................................................................................................ 26
    ISyE Graduate Programs ..................................................................................................................... 27
    MS — Course Options ........................................................................................................................ 27
    MS — Thesis/Research Option ............................................................................................................. 27
    PhD in Industrial Engineering ............................................................................................................ 28
    MBA Program ..................................................................................................................................... 28
VIII. INDEX OF WEB RESOURCES............................................................................................................ 29
Introduction to Industrial and Systems Engineering at UW-Madison

Important Contact Information

Department of Industrial and Systems Engineering (ISyE)

Laura Albert
ISyE Department Chair
laura@engr.wisc.edu, (608) 890-1931
3107C Mechanical Engineering Building

Amanda Smith
Assoc. Chair for Undergraduate Affairs
Amanda.smith@wisc.edu, (608) 890-3423
3107E Mechanical Engineering Building

Student Services

Maria Zarzalejo Camejo
Undergraduate Student Services Coordinator
zarzalejocam@wisc.edu, (608) 263-7038
1410 Engineering Drive, Rm. 170

Francisca Jofre
Undergraduate Student Services Coordinator
jofre@wisc.edu, (608) 263-7038
1410 Engineering Drive, Rm. 170

Stacy Harnett
Undergraduate Student Services Coordinator
sharnett@wisc.edu, (608) 890-4594
1410 Engineering Drive, Rm. 170

Please contact Maria, Francisca, or Stacy for any questions about your ISyE program and more!

ISyE Department Administration

David Kantor
Department Administrator
dkantor@wisc.edu, (608) 263-3214
3107D Mechanical Engineering Building

Kelly Petersen
University Services Program Associate
kmpetersen2@wisc.edu, (608) 262-2686
3107 Mechanical Engineering Building

Jane Feller
Communications Specialist
jfeller3@wisc.edu (608) 890-1617
3107 Mechanical Engineering Building

Full List of ISyE faculty
http://directory.engr.wisc.edu/ie/faculty
College of Engineering
Jennifer Binzley
Assistant Dean, Undergraduate Affairs
binzley@wisc.edu, (608) 262-3484
2620 Engineering Hall

Manuela Romero
Associate Dean, Undergraduate Affairs
mromero@wisc.edu (608) 262-5511
2620 Engineering Hall

Rachel Jones
Assistant Dean, Student Services
rejones5@wisc.edu, (608) 890-3692
2620 Engineering Hall

ISyE Prospective Students Please Contact
Engineering General Resources (EGR)
coeadvising@engr.wisc.edu
(608) 262-2473

UW-Madison Admissions
onwisconsin@admissions.wisc.edu
608-262-3961

Quick Links

- My UW Homepage
- ISyE Department Home Page
- UW-Course Guide (Curriculum): BS-ISYE
- Office of the Registrar – Course Search and Enroll
- Office of the Registrar – “How to do it” (Degree planner & scheduler, withdrawals, and course change requests, etc.)
- Academic Calendar
- Tuition and Fees
- Office of Student Financial Aid
- Bursar’s Office
- University Housing
Overview

Industrial engineers make things better!

The first bachelor’s degree in Industrial Engineering at the University of Wisconsin-Madison was awarded in 1969. Since that time, an increasing percentage of industry and other organizations have discovered the value of industrial and systems engineers. Today, there is a large demand for people with diversified backgrounds, who possess technical knowledge and people skills.

In the Department of Industrial and Systems Engineering at UW-Madison, the course curriculum is designed to give you this background while allowing you choices to match your interests. Courses focusing on team and design projects also help to prepare you for success in the workplace.

Through the ISyE required courses and electives you will be exposed to the following main areas of interest:

- Engineering Analytics and Operations Research
- Healthcare Systems Engineering
- Human Factors and Ergonomics
- Manufacturing and Supply Chain Management

After graduation, there are many different job opportunities available to industrial engineers.

There is virtually no limit to what can be done using industrial and systems engineering! Many industrial engineers are employed in some facet of manufacturing, where they interface with many types of professionals and work to blend technology, people, money, and information for smooth and efficient operations. Job opportunities outside manufacturing industries abound as well. Industrial engineers work in hospitals and medical centers, telecommunication companies, research laboratories, education systems, airline and transportation companies, banks, consulting organizations, and more. Many industrial engineers also go into management positions.

How do I choose my electives?

Refer to the GUIDE to see your options.

Review the individual class descriptions and get an idea of what the work in each area would look like for you.

Still unsure?
Contact your assigned faculty or academic advisor for more information.

Academic Advisors:
Francisca Jofre, Stacy Harnett, or Maria Zarzalejo Camejo in Student Services:
1410 Eng. Drive, Room 170
jofre@wisc.edu / (608) 260-0625
sharnett@wisc.edu / (608) 890-4594
zarzalejocam@wisc.edu / (608) 263-7038
Department Educational Mission, Vision & Guiding Principles

Mission:
Create, acquire, assimilate, apply, and transfer knowledge for the design, analysis, improvement, and implementation of complex systems that include humans, materials, and other resources – the essence of Industrial and Systems Engineering.

Vision:
To be a top-ranked industrial and systems engineering department recognized for:
- Innovative educational curricula and learning experiences
- Strong, balanced research program
- Positive and diverse learning environment
- Beneficial outreach/technology transfer activities
- Leadership in the industrial and systems engineering profession

Guiding Principles:
- Support and reward excellence and innovation.
- Create competencies for life-long learning.
- Foster environments for teamwork, diversity, and good university citizenship.
- Create partnerships with industry, government, and alumni.
- Act with professional and ethical responsibility.
- Advance the reputation of the ISyE profession, the ISyE Department, and the University.
ISyE Educational Objectives

- Graduates will demonstrate competence in the professional practice of industrial engineering.
- Graduates will demonstrate the skills needed to assume leadership in their workplaces and profession.
- Graduates will act with professional and ethical responsibility and appreciate the impact of proposed solutions in a global/societal context.
ISyE Educational Outcomes

A graduate from UW-Madison with a BS in Industrial & Systems Engineering (BSIE) can:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

- Communicate effectively with a range of audiences.

- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

- Develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions.

- Acquire and apply new knowledge as needed, using appropriate learning strategies.

- Recognize, describe, predict, and analyze systems behavior.

- Understand physiological, cognitive, and sociotechnical aspects of humans as components in complex systems design.

- Apply the techniques, skills, and modern engineering tools necessary for engineering practice, such as quality engineering, optimization, simulation, and project management.
All current curriculum requirements should be viewed via the official UW-Madison portal, known as “The Guide”. The requirements for a BS in ISyE can be found here:

**Official College of Engineering Rules and Regulations**

**Substitution Procedure**

Any time you want to deviate from the published elective lists (pgs. 11-12), you must fill out a [course substitution form](#) and meet with your academic advisor to submit the form.

Course substitutions will be reviewed by the department and you will be notified online of the outcome of the request. Course substitution requests must be submitted **BEFORE** you register for the course.

**Pass-Fail Option Information**

Pass-Fail (P-F) is an alternative way of being graded in a regularly graded course not counting toward your degree program (a free elective). A student may change the grading option of a full-semester course to or from pass-fail only **during the first four weeks of classes**. These courses do not fulfill degree requirements. Only students in good standing and who have accumulated at least 12 credits toward the degree before taking a course may elect the P-F privilege. Pass-fail grades are not included in GPAs.

The pass-fail agreement is between the student and the Registrar, and is not revealed to the person teaching the course. The person teaching the course submits the appropriate letter grade to the Registrar, who converts C or higher grades to S (Satisfactory), and D or F grades to U (Unsatisfactory).

Find more information about enrollment [here.](#)
ISyE General Information

Advising
The College of Engineering (COE) encourages students to seek guidance from multiple sources, including both faculty and academic advisors, because they will receive richer and more valuable advice.

Role of the Student in the Advising Process

• The COE expects students to be active in educational planning and advisement.

Student Expectations:

• Know your degree requirements
• Monitor your academic progress, which includes knowing what courses have been completed, what courses remain, and what “good academic standing” means
• Be aware of the policies and procedures that guide your studies
• Consult regularly with an advisor, especially before every registration period
• Be aware of how you learn in order to balance course schedules

Advising Day

The ISyE department will hold regularly-scheduled advising check-ins to assist with this process. Students should plan on attending. If you are studying abroad, in a co-op, or otherwise unable to attend advising day, you must check in with your faculty or academic advisor prior to enrollment time.

Faculty versus Academic Advisors

All undergraduate students who have been admitted into the ISyE department will be assigned both a faculty advisor and an academic advisor to assist them throughout their ISyE program.

Faculty Advisors: Each student is strongly encouraged to take the initiative to build a relationship with his or her faculty advisor and other faculty members. Building a mentoring relationship with faculty is best done by meeting in person with faculty for scholarly advice, such as guidance on research/independent study projects or advice on post-graduation plans.

Faculty advisors are best to see for:

• Questions about course content or intensity
• Help selecting advanced elective coursework to align with your post-graduation plans

Academic Advisors: The academic advisor advises students on curriculum requirements, COE and UW-Madison policies and procedures, and graduate school or professional school application processes. You can meet with an IE academic advisor by drop-in appointments at the Undergraduate Student Services Center in 1410 Engineering Drive Suite 170. You can also make an appointment directly with Maria Zarzalejo Camejo, Francisca Jofre or Stacy Harnett through Starfish. (Learn more about Starfish here.)

Academic advisors are the best resource for:

• Developing individual educational plans
• Answering questions about reports from the Degree Audit Reporting System (DARS)
• Connecting students with other campus resources (e.g., Office of Student Financial Services, Engineering Transfer Admissions, International Engineering Studies and Programs, Engineering Career Services, etc.)
Resources & Policies for Personal Conduct and Care

Office of Compliance
Compliance is a shared responsibility among all members of the university community. The Office of Compliance promotes ethical conduct and compliance with all applicable laws, regulations, and policies at UW-Madison. The Office of Compliance provides program oversight for the following focus areas:

- Civil Rights
- Americans with Disabilities Act (ADA)
- Equal Opportunity Complaint Investigation
- Health Insurance Portability and Accountability Act (HIPAA)
- Title IX

Dean of Students Office
The Dean of Students Office is a primary resource for connecting students who are navigating personal, academic, or health issues. The Dean of Students Office assists students with a variety of concerns by working directly with them and connecting them to appropriate resources on campus. They also consult with and serve as a resource for faculty and staff, parents, families, and friends, working together to serve students. The Dean of Students Office also serves as a central location for reporting issues of hate and bias, sexual assault, and hazing.

- Report an Incident

Policy on Sexual Misconduct
When sexual misconduct 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 to act responsibly when confronted by the issue of sexual misconduct, thereby promoting an environment that better supports excellence in teaching, research, and service. You can find the full UW-Madison Policy on sexual misconduct here:

- UW-Madison Policy on Sexual Harassment and Sexual Violence

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.

Student Health and Self-Care
Part of the mission of the University of Wisconsin is to enhance learning and student success by promoting, protecting, and restoring health and well-being. The following resources are available for all students.

- University Health Services (UHS)
- UHS Mental Health Resources
- UW-Madison Recreation and Well-Being

Additional Personal Care Resources
- McBurney Disability Center
- Gender Discrimination- Know Your Rights
Additional Academic Resources

**Degree Audit Reporting System (DARS)**

The Degree Audit Reporting System (DARS) is part of UW–Madison’s commitment to academic advising for undergraduate students. The DARS report provides an automated summary of a student’s academic progress toward a degree by showing which requirements have already been completed, and which remain unsatisfied. The report is particularly helpful when combined with the knowledge and insight of an advisor. DARS is not intended to replace students’ contact with academic and faculty advisors. Instead, the quick and thorough analysis provided by DARS allows more time in an advising appointment to discuss course options, research opportunities, plans for graduate school, or issues of personal interest or concern to students. DARS reports should always be reviewed with a student’s transcripts.

Learn more about DARS by reading the [Quick Guide for Students](#). You can order a DARS report at [my.wisc.edu](http://my.wisc.edu) on the **Student Records** tab.

*Note: Please remember that DARS is just a computer program, and it may occasionally make mistakes or produce a report that is difficult to read. If you see something on your DARS report that does not seem right or that you don’t understand, please contact an advisor for further assistance.*

**Scholarships**

In recent years, the Department has been able to award 60-70 scholarships per year to ISyE students. Scholarships are awarded starting in fall of the academic year and can go into spring, depending on a student’s graduation timeline. Scholarships range from $1,000-$5,000 and are awarded to students based on various criteria, including academic record, community involvement and financial need. Any ISyE student with a strong academic record is encouraged to apply. Applications are accepted between March 1 and May 1st.

[Scholarship applications can be found at](http://scholarships.wisc.edu/Scholarships).
Tutoring & Academic Assistance

College of Engineering Undergraduate Learning Center (ULC)

The CoE undergraduate learning center is a good resource for many classes:

- **Drop-in tutoring**
- **Practice Engineering Problem Solving (PrEPS):** academic support for EMA 201, EMA 202, ME 240, Physics 201, and Physics 202
- **Group tutoring/study table**
- **Tutoring-by-request** (authorized students)

Contact Information: Rm 405 Wendt Commons, ulc@engr.wisc.edu

Other Academic Resources and Learning Centers

- **Business Learning Center:** Economics, accounting, finance
- **Center for Educational Opportunity:** Academic and ancillary support services first-generation college students, students from economically vulnerable families, and students with disabilities.
- **Chemistry Learning Center:** Course support and additional resources
- **GUTS - Greater University Tutoring Service:** Math, science, languages, computer science, economics, statistics, etc.
- **Math Learning Center:** Course support and additional resources
- **Physics Learning Center:** Physics 103, 104, 207, 208
- **Residence Hall Tutoring:** Popular classes such as Spanish, economics, math, and chemistry
- **Statistics Department Tutoring:** Course support and additional resources
- **Writing Center:** For UW-Madison courses with a writing component; the Writing Center does NOT provide support for Communications-A, English as a Second Language, or creative writing courses.
To maintain F-1 and J-1 visa status, international students must be enrolled in a full course of study each fall and spring semester.

For undergraduate students, a full course of study is 12 enrolled credits per semester. Summer enrollment is not required by the US federal government for F-1 and J-1 visa holders unless you are a new student (with a summer reporting date on your I-20 for initial school attendance).

There are valid academic and medical reasons for an international student to reduce his/her credit load. For any semester an international student intends to reduce his/her course load, he/she must:
1. Complete the Reduced Course Load for F-1 and J-1 Student form. The form is available at https://apps.iss.wisc.edu/upload/documents/rcl.pdf
2. Have his/her academic advisor or medical professional sign the form and submit the form to the International Student Services (ISS) for review.

Check with an advisor in the ISS office if you want to confirm that you are in compliance with your visa regulations.
CoE Transfer Services

Students enrolled in other engineering majors at UW-Madison can apply to transfer into ISyE through the CoE link above at the end of each academic term. Inter-departmental transfers are competitive and not guaranteed, if you are considering transferring majors, contact your academic advisor to discuss further.

For additional questions, contact: coeadvising@wisc.edu
Enhancing Your Educational and Professional Experience

**Wendt Commons**, located next to Union South on the Engineering campus, provides a “one-stop-shopping” approach to teaching and learning services.

Wendt Commons is also home to a constantly expanding technology-based community including the UW Makerspace. Students benefit by being able to access computer labs, cameras and video equipment, 3D printers, course videos, and virtually hardware, all software and tools needed for classes.

Wendt Commons is comprised of:

- **UW Makerspace**
- **Wisconsin Collaboratory for Enhanced Learning (WisCEL) Center**
- **College of Engineering Active Learning Classrooms (ALC)**
- **Engineering Media Services**
- **Undergraduate Learning Center (ULC)**
Certificate Programs in the College of Engineering

While UW-Madison does not have minors, it does offer organized programs in specific disciplines that lead to a certificate and in most cases, a transcript notation indicating successful completion.

Engineering Certificates

In addition to our engineering majors, you also can choose from a broad range of certificate programs that are designed to enhance your education, expand your skillset, and make you a more versatile, marketable engineer. Students need to be in good standing with the College of Engineering to apply for a certificate program. Certificates need to be completed concurrently with your engineering major.

- Biology in Engineering Certificate
- Certificate in Engineering for Energy Sustainability
- Certificate in Engineering Thermal Energy Systems
- Certificate in Integrated Studies in Science, Engineering and Society
- Certificate in International Engineering
- Certificate in Manufacturing Engineering
- Certificate in Nuclear Engineering Materials
- Certificate in Technical Communication

Engineering Cooperative Education and Summer Intern Program

Students gain valuable "real world" engineering experiences working with a variety of industries and governmental agencies through the dynamic cooperative-education and summer-intern programs. Both of these programs are operated by the College of Engineering’s Engineering Career Services office. Any credits gained will be recorded as “Professional Electives.” Students can apply up to 2 credits of ISyE 001 co-op or internship credits toward their ISyE degree program.

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 typically provides a solid eight 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 $20/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 more complex projects that require more time to complete.

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.

Contact Person: Stephanie Salazar Kann, (608) 262-5096
Engineering Study Abroad

Studying abroad offers valuable cross-cultural experiences and the opportunity to improve your language skills, live and work in culturally diverse surroundings, and improve your value on the job market.

Planning for your study-abroad experience is of utmost importance. You must meet with your academic and/or faculty advisor as well as with the coordinator of the study-abroad experience. Students are ultimately responsible for understanding how courses taken abroad will or will not fulfill degree requirements.

Come to your meeting prepared to discuss the following topics with your advisor:

- Courses you plan to take to ensure an academically successful experience
- Advisor approval/clearance forms
- Departmental course equivalencies
- DARS designations for courses that fulfill elective credits
- Grading of courses taken abroad
- Completing the last 30 credits abroad (if applicable)

Contact Information: International Engineering Studies & Programs
1415 Engineering Drive, 1150 Engineering Hall
Tel: (608) 263-2191 international@engr.wisc.edu

International Engineering Studies & Programs (College of Engineering Study Abroad)

International Engineering Studies and Programs within the College of Engineering prepares UW-Madison engineering students to study abroad. As an IESP participant, you can choose from more than 50 study-abroad programs in the Americas, Asia and the Pacific, and Europe. Most programs are available for a semester or year, and many offer instruction in English.

While abroad on an IESP program, you will maintain student status and you will earn pass-fail grades for coursework completed overseas.

The CoE does not consider study-abroad programs to be semesters in residence; therefore, you will need to request a waiver of the college's residency requirements (at the time of application) if you plan to study abroad during your final 30 credits. The majority of programs are exchanges, which means that you would pay the same tuition as you currently do at UW-Madison. Financial aid is available to all UW degree-seeking students on study-abroad programs – even those who have not received aid in the past.

A minimum GPA of 3.0 (for most programs) is required to apply. Application deadlines are October 1 for the spring semester and March 1 for the fall semester or for the entire academic year.

International Engineering Certificate

To obtain a certificate in International Engineering, students must have a five-week (minimum) study abroad experience. Additional information and access to the application can be found here.
International Academic Programs (UW-Madison Study Abroad)

International Academic Programs offers more than 150 study-abroad programs to UW-Madison students across campus. Instruction is in a wide range of languages, including many options in English. Most programs are limited to course options in social sciences and humanities, though a limited number of programs do have engineering courses available.

While abroad on an IAP program, you will maintain your student status, and are typically assigned a letter grade for the courses that you will take. If you have questions about the grading basis for a particular course, you will need to talk to both IAP and your advisor.

The College of Engineering does not consider study-abroad programs to be semesters in residence; therefore, you will need to request a waiver of the college’s residency requirements (at the time of application) if you plan to study abroad during your final 30 credits.

Contact information:  International Academic Programs
106 Red Gym
716 Langdon Street
Tel: (608) 265-6329
peeradvisor@studyabroad.wisc.edu

Other UW-Madison Study Abroad Experiences

If a UW-Madison engineering student chooses to study abroad through another unit (or independently), it is extremely important that the student meet with the following people before going abroad:

- academic and/or faculty advisor
- coordinator of the study-abroad program
# ISyE Student Organizations

## Institute of Industrial and Systems Engineers (IISE)

The Institute of Industrial & Systems Engineers is the world’s largest professional society dedicated solely to the support of the industrial engineering profession and individuals involved with improving quality and productivity.

IISE UW-Madison seeks to provide students with opportunities to develop lasting industrial, faculty and peer relationships. In addition, we aim to facilitate community involvement and to enhance educational programs across all disciplines within ISyE at UW-Madison and the Madison community at large.

For details on how to get involved, contact:
- President: Ellen Pflaster, epflaster@wisc.edu
- Faculty Advisor: Prof. Raj Veeramani, raj.veeramani@uwebc.wisc.edu
  - [www.iiseuwmadison.org](http://www.iiseuwmadison.org)
  - [@iieuwmadison](https://twitter.com/iieuwmadison)

## Alpha Pi Mu, UW-Madison Chapter (APM Madison)

Alpha Pi Mu is the only nationally accepted industrial engineering honor society. It provides a common ground on which outstanding young engineers can exchange ideas, and to provide experiences which could help their future professional development.

We are currently looking for student leaders to activate our APM Chapter. If you are interested in learning more, please contact:
- Amanda Smith, Amanda.smith@wisc.edu

## Human Factors and Ergonomics Society (HFES)

HFES brings together students and researchers from different fields and provides a forum to discuss, learn about, participate in, and integrate the various disciplines influencing the field of human factors at UW and in the community.

For details on how to get involved, contact:
- President: Hanna Barton, hbarton@wisc.edu
- Faculty Advisor: Professor Robert Radwin, rradwin@wisc.edu
  - [http://hfes.engr.wisc.edu/](http://hfes.engr.wisc.edu/)
  - Facebook: [https://www.facebook.com/groups/356076644436263](https://www.facebook.com/groups/356076644436263)

## INFORMS

The student chapter of INFORMS at the Operations Research is an association for students to engage with each other and share the knowledge of experience, research in, operations research and analytics. Our organization has activities such that orientations for new students, informal research discussions and presentations, operations research, and social events.

For details on INFORMS, contact:
- President: Akilesh Soni, soni6@wisc.edu
- Faculty Advisor: Professor Laura Albert, laura@engr.wisc.edu
  - [https://win.wisc.edu/organization/INFORMS-UW](https://win.wisc.edu/organization/INFORMS-UW)

## Society of Manufacturing Engineers (SME)

The Society of Manufacturing Engineers serves its members and the international manufacturing community through the advancement of professionalism, knowledge, and learning.

Our Chapter strives to maintain an active schedule of exciting plant tours along with interesting and informative technical presentations and activities, to promote an increased awareness of manufacturing engineering in our community.

For details and collaboration, contact:
- President: Congfang Huang, chuang286@wisc.edu
- Faculty Advisor: Professor Kaibo Liu, kliu8@wisc.edu
  - [http://mpac.engr.wisc.edu/SME/SME.html](http://mpac.engr.wisc.edu/SME/SME.html)

We highly recommend students become involved in extra-curricular organizations. These experiences provide you with a wide network of people and resources and they increase your understanding of the field by helping forge interactions with professors, professionals, and peers.

In addition to these ISYE-run organizations, there are numerous organizations open to students across Engineering disciplines. Begin your search here:

**Wisconsin Involvement Network (WIN)**
Engineering Career Services (ECS)

Engineering Career Services (ECS) works with companies from around the country to help our engineering students at all degree levels, as well as our College of Engineering alumni, with career development.

ECS helps students one-on-one by:

- preparing them for internship/co-op experiences
- assisting with job searches
- helping with resume & cover letter writing
- practicing interviewing skills (mock interviews, sample interview questions)
- providing other important career information such as negotiating job offers and salaries
The Department of Industrial and Systems Engineering at UW-Madison offers opportunities for graduate study leading to the Master of Science Degree (Course Only Degree Options and MS Thesis/Research Degree Option) and the Doctor of Philosophy degrees in Industrial Engineering. Students entering the MS Degree program with a BS in Industrial Engineering from UW-Madison have automatically satisfied all the prerequisites. Discuss your interest and obtain more information about each program from your ISyE Academic or Faculty advisor.

**MS – Human Factors Health Systems Engineering (HFHSE)**

This option allows a student to obtain a Master of Science degree in just one academic year after their bachelor's degree. Human Factors and Health Systems Engineering professionals can create productive, safe, and satisfying environments for humans, and apply industrial and systems engineering tools and approaches to specific health care problems by examining, designing, testing, and evaluating products, environments and how people interact in it. This Course-Only Option is intended for students who do not plan to pursue a PhD degree. Those students interested in obtaining a PhD should consider the Master of Science in Industrial Engineering 2-year program (Thesis/Research Option).

**MS – Systems Engineering and Analytics (SEA)**

This option allows a student to obtain a Master of Science degree in just one academic year after their bachelor's degree. The program in Systems Engineering and Analytics will train students to recognize, identify, analyze, and solve decision problems arising in the efficient operations of engineering systems. The program focuses on methods and models for data analytics and data-driven decision-making. This Course-Only Option is intended for students who do not plan to pursue a PhD degree. Those students interested in obtaining a PhD should consider the Master of Science in Industrial Engineering 2-year program (Thesis/Research Option).

**Master of Science in Industrial Engineering —Research Option (1 Year)**

30 credit Program Options – Students with a bachelor’s degree in Industrial Engineering are allowed to count up to 6 credits of approved undergraduate course work toward degree requirements allowing students to complete the MS degree course options in two full semesters (12 credits per semester). Please note: The summer session does not count as a full semester for these programs. GRE exam is not required and a minimum GPA of 3.0 is required.

**Master of Science in Industrial Engineering – Thesis/Research Option (2 year)**

Minimum 30 credits (ISyE Undergraduate Credits cannot be used);

For ISyE seniors wanting to pursue a thesis and PhD you can continue your education and obtain a Master of Science in Industrial and Systems Engineering degree. One advantage of this option is the opportunity to explore an area of interest in more depth and more comprehensively. GRE exam is not required and a minimum of 3.0 GPA is required.

The areas of Industrial and Systems Engineering graduate specialization are:

1. **Human Factors and Ergonomics**: Combines an understanding of technology, behavioral sciences, systems analysis, and special skills in implementing organizational change. The purpose of the program is to produce graduates capable of analyzing and designing the complex systems involving people at work. Graduates will have competence in both the social and technological aspects of a problem and be aware of new innovative ideas of work organization appearing around the world.

2. **Manufacturing & Production Systems Engineering**: Intended to provide the skills and expertise necessary to compete successfully in a manufacturing environment. These skills include knowledge of manufacturing processes and machines and their control, knowledge of the essentials of manufacturing systems design and analysis, and knowledge and “hands-on” experience with modern manufacturing technology. After satisfying the necessary breadth requirements of the program, students may choose to study, in more depth, a number of specialized topics from the approved course offerings to enhance their career readiness.
3. **Decision Science/Operations Research (DS/OR):** Aims to improve the quality of decisions about the management of scarce resources. Problem solving in ISYE entails recognizing and identifying decision problems as well as generating, evaluating, choosing, and implementing solutions to them. The DS/OR area seeks to train students in the methodology used in decision science and operations research, in order to prepare them for careers in government and industry.

4. **Health Systems Engineering:** This option seeks to train students to look at a broad range of issues in health care, including inpatient and outpatient care, health promotion and prevention, long-term care, quality improvement and management, health care technology, patient safety, and program and system evaluation.

**Doctor of Philosophy Degree in Industrial Engineering**

Can be pursued directly after obtaining a bachelor’s degree but students will want to have a research background as an undergraduate before making the decision to directly pursue a PhD program after graduation. Most faculty advisors will recommend that the student earn their master’s degree along the way to a PhD. This plan takes approximately 4 years to complete.

**Application Requirements:**
Application requirements are the same as the 30 credit Master’s Thesis/Research program but must include resume or CV and an ISyE Faculty member must agree to serve as your advisor.

**Master of Business Administration (MBA)**

A popular option for ISyE graduates is to pursue a **Master of Business Administration (MBA)**.

Some graduates may find it advantageous to enter the program directly after graduation; others may work on the degree part time through the evening MBA program; others may return to school full time after working in industry. **The MBA program at UW-Madison’s School of Business requires a number of foundation courses and significant prior work experience. These courses, plus 28 advanced credits, are necessary for the degree.**

**Additional UW-Madison Graduate Programs**

UW-Madison offers 250+ graduate programs across a wide variety of disciplines.

Learn more at: [Graduate School|UW-Madison](https://graduate.wisc.edu).
INDEX of WEB RESOURCES

Academic Calendar https://secfac.wisc.edu/academic-calendar/
Associated Students of Madison https://www.asm.wisc.edu/
Badger Support Network https://www.badgersupportnetwork.org
Bursar’s Office https://www.bursar.wisc.edu
Campus and Visitor Relations https://info.wisc.edu
Certificate, Engineering for Energy Sustainability https://energy.wisc.edu/education/for-students/academic-programs/certificate-energy-sustainability
Certificate, Technical Communication https://tc.engr.wisc.edu/certificate
Child Care and Family Resources https://occfr.wisc.edu/
Code of Conduct https://www.students.wisc.edu/doso/students/

College of Engineering:
- Active Learning Classrooms https://wiscel.wisc.edu/wiscel-centers/coe-active-learning-classrooms/
- Diversity Affairs Office https://engr.wisc.edu/academics/student-services/diversity-programs/
- Safety https://safety.engr.wisc.edu
- Student Services https://www.engr.wisc.edu/academics/student-services/
- Undergraduate Learning Center (ULC) https://www.engr.wisc.edu/academics/student-services/ulc/

Commencement https://commencement.wisc.edu/

Computer-Aided Engineering https://www.cae.wisc.edu/
Course Search & Enroll https://registrar.wisc.edu/course-search-enroll
Dean of Students Office https://doso.students.wisc.edu
Equity, Diversity & Inclusion at UW-Madison https://diversity.wisc.edu
Employee Assistance Office https://employee-assistance-office/
Engineering Career Services https://ecs.wisc.edu
Engineering Media Services https://video.engr.wisc.edu
Gender and Sexuality Campus Center https://lgbt.wisc.edu/
Information Technology, UW-Madison https://it.wisc.edu
Innovation Days https://innovation.wisc.edu/
International Student Services https://iss.wisc.edu/
ISyE BS Curriculum (Guide) https://guide.wisc.edu/undergraduate/industrial-systems-engineering/industrial-engineering-bs/
ISyE Graduate Programs (Guide) https://guide.wisc.edu/graduate/industrial-systems-engineering/
ISyE Program Course (Canvas) https://canvas.wisc.edu/courses/202619
ISyE Dept. Home page https://www.engr.wisc.edu/department/industrial-systems-engineering/
Job Center, UW Student https://jobcenter.wisc.edu/
<table>
<thead>
<tr>
<th>Learning Centers (non-Engineering):</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Learning Center</td>
<td><a href="https://bus.wisc.edu/current-student-resources/bba/academic-support/resources/business-learning-center">https://bus.wisc.edu/current-student-resources/bba/academic-support/resources/business-learning-center</a></td>
</tr>
<tr>
<td>Center for Educational Opportunity</td>
<td><a href="https://ceo.wisc.edu">https://ceo.wisc.edu</a></td>
</tr>
<tr>
<td>Chemistry Learning Center</td>
<td><a href="https://clc.chem.wisc.edu">https://clc.chem.wisc.edu</a></td>
</tr>
<tr>
<td>Greater University Tutoring Service (GUTS)</td>
<td><a href="https://guts.wisc.edu">https://guts.wisc.edu</a></td>
</tr>
<tr>
<td>Math Learning Center</td>
<td><a href="https://math.wisc.edu/undergraduate/mlc/">https://math.wisc.edu/undergraduate/mlc/</a></td>
</tr>
<tr>
<td>Physics Learning Center</td>
<td><a href="https://plc.physics.wisc.edu">https://plc.physics.wisc.edu</a></td>
</tr>
<tr>
<td>Residence Hall Tutoring</td>
<td><a href="https://www.housing.wisc.edu/residence-halls/academics/tutoring">https://www.housing.wisc.edu/residence-halls/academics/tutoring</a></td>
</tr>
<tr>
<td>Statistics Dept. Tutoring</td>
<td><a href="https://stat.wisc.edu/learning-center">https://stat.wisc.edu/learning-center</a></td>
</tr>
<tr>
<td>The Writing Center</td>
<td><a href="https://writing.wisc.edu">https://writing.wisc.edu</a></td>
</tr>
<tr>
<td>Makerspace</td>
<td><a href="https://making.engr.wisc.edu">https://making.engr.wisc.edu</a></td>
</tr>
<tr>
<td>McBurney Disability Resource Center</td>
<td><a href="https://mcburney.wisc.edu">https://mcburney.wisc.edu</a></td>
</tr>
<tr>
<td>Morgridge Center for Public Service</td>
<td><a href="https://morgridge.wisc.edu">https://morgridge.wisc.edu</a></td>
</tr>
<tr>
<td>Multicultural Student Center</td>
<td><a href="https://msc.wisc.edu/">https://msc.wisc.edu/</a></td>
</tr>
<tr>
<td>My UW Homepage</td>
<td><a href="http://www.newstudent.wisc.edu/">http://www.newstudent.wisc.edu/</a></td>
</tr>
<tr>
<td>New-Student Programs</td>
<td><a href="https://compliance.wisc.edu">https://compliance.wisc.edu</a></td>
</tr>
<tr>
<td>Office of the Registrar</td>
<td><a href="https://www.registrar.wisc.edu/">https://www.registrar.wisc.edu/</a></td>
</tr>
<tr>
<td>Office of Student Financial Aid</td>
<td><a href="https://www.finaid.wisc.edu">https://www.finaid.wisc.edu</a></td>
</tr>
<tr>
<td>Recreation &amp; Wellbeing</td>
<td><a href="https://www.recwell.wisc.edu">https://www.recwell.wisc.edu</a></td>
</tr>
<tr>
<td>SAFE Nighttime Services</td>
<td><a href="https://transportation.wisc.edu/transportation/safeservices.aspx">https://transportation.wisc.edu/transportation/safeservices.aspx</a></td>
</tr>
<tr>
<td>Software Training for Students</td>
<td><a href="https://advising.wisc.edu/services/training">https://advising.wisc.edu/services/training</a></td>
</tr>
<tr>
<td>Starfish</td>
<td><a href="https://tc.engr.wisc.edu/competitions/entering-the-steuber-prize-for-excellence-in-writing/">https://tc.engr.wisc.edu/competitions/entering-the-steuber-prize-for-excellence-in-writing/</a></td>
</tr>
<tr>
<td>Study Abroad (College of Engineering)</td>
<td><a href="https://www.engr.wisc.edu/academics/student-services/academic-advising-first-year-undergraduate-students/">https://www.engr.wisc.edu/academics/student-services/academic-advising-first-year-undergraduate-students/</a></td>
</tr>
<tr>
<td>Study Abroad (UW-Madison)</td>
<td><a href="https://studyabroad.wisc.edu">https://studyabroad.wisc.edu</a></td>
</tr>
<tr>
<td>TEAM Lab</td>
<td><a href="https://teamlab.engr.wisc.edu">https://teamlab.engr.wisc.edu</a></td>
</tr>
<tr>
<td>Transfer Student Information</td>
<td><a href="https://www.admissions.wisc.edu/apply/transfer/">https://www.admissions.wisc.edu/apply/transfer/</a></td>
</tr>
<tr>
<td>Transportation Services</td>
<td><a href="https://transportation.wisc.edu/home.aspx">https://transportation.wisc.edu/home.aspx</a></td>
</tr>
<tr>
<td>Tuition and Fees</td>
<td><a href="https://www.registrar.wisc.edu/tuition">https://www.registrar.wisc.edu/tuition</a></td>
</tr>
<tr>
<td>Undergraduate Catalog (Guide)</td>
<td><a href="https://guide.wisc.edu">https://guide.wisc.edu</a></td>
</tr>
<tr>
<td>University Apartments</td>
<td><a href="https://www.housing.wisc.edu/apartments/">https://www.housing.wisc.edu/apartments/</a></td>
</tr>
<tr>
<td>University Health Services (UHS)</td>
<td><a href="https://www.uhs.wisc.edu">https://www.uhs.wisc.edu</a></td>
</tr>
<tr>
<td>UHS Mental Health Resources</td>
<td><a href="https://uhs.wisc.edu/mental-health">https://uhs.wisc.edu/mental-health</a></td>
</tr>
<tr>
<td>University Housing</td>
<td><a href="https://www.housing.wisc.edu">https://www.housing.wisc.edu</a></td>
</tr>
<tr>
<td>University Police Department</td>
<td><a href="https://www.uwpd.wisc.edu">https://www.uwpd.wisc.edu</a></td>
</tr>
<tr>
<td>UW Grad School</td>
<td><a href="https://grad.wisc.edu/about">https://grad.wisc.edu/about</a></td>
</tr>
<tr>
<td>UW School of Business MBA Program</td>
<td><a href="https://wsb.wisc.edu/programs-degrees/mba">https://wsb.wisc.edu/programs-degrees/mba</a></td>
</tr>
<tr>
<td>UW Student Organizations</td>
<td><a href="https://win.wisc.edu/organizations">https://win.wisc.edu/organizations</a></td>
</tr>
<tr>
<td>Veteran Services</td>
<td><a href="https://veterans.wisc.edu">https://veterans.wisc.edu</a></td>
</tr>
<tr>
<td>WI Collaboratory for Enhanced Learning (WisCEL)</td>
<td><a href="https://wiscel.wisc.edu">https://wiscel.wisc.edu</a></td>
</tr>
<tr>
<td>Wisconsin Scholarship Hub (WiSH)</td>
<td><a href="https://wisc.academicworks.com">https://wisc.academicworks.com</a></td>
</tr>
<tr>
<td>Wisconsin Union</td>
<td><a href="https://union.wisc.edu">https://union.wisc.edu</a></td>
</tr>
</tbody>
</table>