Industrial Engineering

MS Graduate Handbook
2023 - 2024

ASU Ira A. Fulton Schools of
Engineering
Arizona State University

MANUAL OF THE MS DEGREE IN INDUSTRIAL ENGINEERING

ARIZONA STATE UNIVERSITY

2023– 2024

Addendum: The required 4 Area courses can now be selected from multiple areas (OR/ PSL, IS, and IMS)

IE graduate degrees please contact:

Office of Graduate Programs
School of Computing and Augmented Intelligence
Arizona State University
PO Box 878809
Tempe, AZ 85287-8809
Phone: (480) 965-3199

IE on the web: http://SCAI.engineering.asu.edu/forstudent/graduate/industrial-engineering/
E-mail address: Scai.grad.tempe@asu.edu

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I.   Introduction to the Industrial Engineering Program

The Industrial Engineering (IE) Program of Arizona State University (ASU) offers two graduate degrees: Master of Science (MS) with a thesis or a non-thesis option and a Doctor of Philosophy (Ph.D.). The MS degree requires a written and an oral defense of the thesis or a final written Project Portfolio. The Ph.D. degree is offered to students who have completed a Bachelor's or Master's degree in engineering, or a closely related field, with distinction. It requires a qualifying exam, Comprehensive Exam, written dissertation, and an oral defense of the dissertation.

Here at ASU's School of Computing and Augmented Intelligence (SCAI), we envision a society where secure, accurate, and current information is ubiquitously available and data is seamlessly collected, managed, and converted into information that entertains individuals, empowers businesses, and guides the decisions of both in their daily affairs.

We envision our school as a community recognized by its colleagues internationally as a leader in envisioning and enabling the information-driven society and by students as a preferred location for acquiring the knowledge and skills necessary to contribute to this vision.

We envision a community of scholars cooperatively engaged in transdisciplinary research addressing the grand challenges of modern society and supporting the intellectual growth of students and colleagues.

Our mission is to benefit society through excellence in education, use-inspired research from basic to translational, and leadership in service to the profession and community. We seek to provide a supportive environment that promotes creativity, diversity, multidisciplinary teaming, scholarship, and ethical behavior in order to advance knowledge and practice in computing, information and decision technologies to enhance society.

ASU prohibits all forms of discrimination, harassment, and retaliation. To view ASU's policy please see https://www.asu.edu/aad/manuals/acd/acd401.html.

Title IX protects individuals from discrimination based on sex in any educational program or activity operated by recipients of federal financial assistance. As required by Title IX, ASU does not discriminate on the basis of sex in the education programs or activities that we operate, including in admission and employment. Inquiries concerning the application of Title IX may be referred to the Title IX Coordinator or to the U.S. Department of Education, Assistant Secretary, or both. Contact titleixcoordinator@asu.edu or 480-965-0696 for more information. Office located at 1120 S. Cady Mall, INTDSB 284. For information on making a report please go to www.asu.edu/reportit/.

II.   Objective of the handbook

The purpose of this handbook is to provide guidance and information related to admission, degree requirements, and general policies and procedures. Please note that in

some cases, you will find differences between the Graduate Policies and Procedures and the Industrial Engineering Program requirements. In these cases, IE has established higher standards. Students must satisfy both sets of requirements. Please note that policies and procedures are occasionally amended to improve the program. Changes will be communicated to students through email and posting on the SCAI website.

III.   Student responsibility and resources
All students are expected to become familiar with university and program policies and procedures and abide by the terms set forth. Information is available both online. Most importantly, you should visit the following websites:
- The Graduate College – http://graduate.asu.edu
- Graduate College policies and procedures - https://graduate.asu.edu/policies-procedures
- The Industrial Engineering program – https://scai.engineering.asu.edu/graduate-industrial-engineering/
- The Ira A. Fulton Schools of Engineering – http://engineering.asu.edu
- The International Students and Scholars Center – https://issc.asu.edu/, if applicable.

Wellness Resources

We believe graduate education provides an opportunity to grow in our knowledge and expertise, and during our studies, we may face challenges and hardships that can affect our wellbeing. The Graduate College and the ASU Graduate Student Association have put together resources and best practices guides to help your educational journey. Should you need additional guidance and support, we encourage you to contact a graduate advisor at the SCAI Graduate Advising Office.

- Graduate Wellness Resources – a one-page guide to Financial, Social, Emotional, and Physical Health and Wellness Resources for ASU Graduate Students was developed by the GPSA .
- 10 Best Practices in Graduate Student Wellbeing – proven ways to help graduate students better care for themselves under the increasing demands of graduate school

IV.   Faculty responsibility
The members of the faculty of Industrial Engineering have diverse backgrounds and knowledge. They are available to assist you in your plan of study and your educational and career goals. We encourage you to take the opportunity to make individual appointments with faculty members with whom you have common interests. Please refer to the SCAI website for a list of the faculty names, areas of expertise, and research interests.

V.   Admission and eligibility to the MS degree programs
The Industrial Engineering MS degree requires a background in engineering, math, statistics, sciences or closely related fields. However, in some cases, students with non-

traditional educational backgrounds will be considered for admission. These students may be required to take foundational courses to better prepare for the graduate coursework. A student is encouraged to contact a graduate advisor in the School of Computing and Augmented Intelligence (SCAI), Advising Center to obtain advice on their educational pursuits.

Eligibility - Before applying to the IE MS program, students are required to have completed 3 semesters or 12 credit hours of Calculus including Multivariate Calculus.

Application - All students are required to submit an application and all the required supporting materials with the Office of Graduate Admissions https://students.asu.edu/graduate and pay the required fee to have their application reviewed and processed.

Application deadlines - January 15 for fall semester and September 15 for spring semester - To receive full consideration, we ask that you have all the required documents submitted by the deadline.

GRE scores are not required.

English Proficiency - The University requires all international applicants from a country whose native language is not English to provide the Test of English as a Foreign Languages (TOEFL) or the International English Language Testing System (IELTS) scores, or Pearson (PTE). Industrial Engineering Program uses average scores of 575 (paper-based) or 90 (internet-based) for TOEFL, 7.0 for IELTS, or 115 for Duolingo, and 65 for PTE for admission. **Note that your application will not be processed until the university receives official scores, which are valid two years from the start date of the degree program.** Exemption from the English Proficiency requirement can be met by visiting Graduate Admission site under English Proficiency. Please address all English Proficiency questions with the Office of Graduate Admission https://students.asu.edu/graduate/proficiency. The ASU institution code is 4007 if a department code is required, use: 99 for TOEFL.

Personal statement - Applicant must submit a personal statement that indicates professional goals and reasons for desiring to enroll in the MS programs**.**

Letter of recommendation are not required.

GPA requirement - To be considered for the MS program, we require a minimum cumulative GPA of 3.2 **in the last 60 credit hours** of the undergraduate degree.

Application evaluation - Several factors are taken into consideration when evaluating a student's application: the student's cumulative GPA, major, institution, personal statement, letters of recommendation, standardized test scores, and performance in individual courses.

Notice of Admission - IE submits its recommendation to the Office of Graduate Admission, who will then send the final notice of admission to the applicant in writing via email. You may check your application status on My ASU (my.asu.edu).

Admission Deferrals - Students may, with the recommendation of the degree program, defer their initial start semester and year of admission to one semester. Requests for deferrals must be submitted by the start of the term of original admission. Students who miss the deferral deadlines have the option to submit a petition for an enrollment exception for the original admit term.

Deficiencies - Depending on prior academic preparation and accomplishments of an applicant, deficiency courses may be specified to ensure adequate background preparation. Please note that deficiencies are not intended solely as prerequisites for graduate coursework; they also satisfy the breadth requirement for all graduates of IE.

Below is a list of prerequisites along with the associated ASU course numbers:
- CSE 110 – Principles of Programming in Java
- CSE 205 – Object-Oriented Programming and Data Structures
- MAT 242 – Linear Algebra
- IEE 376 – Deterministic Operations Research
- IEE 380 – Probability and Statistics for Engineering Problem Solving
- IEE 470 – Stochastic Operations Research

Deficiency coursework completed with a grade of "C" or better at the undergraduate level will satisfy the requirements. A grade of "B" or better is required for all assigned deficiency coursework at the post-baccalaureate level. International coursework is evaluated differently.

All students assigned with deficiency in their admission letter should clear before the start of the semester. You are required to clear the deficiency using Options 1 and 2 to ascertain if you need to take the actual course or not. It is important that you do so to ensure success in graduate courses.

Option 1: Waiver Process: Students wishing to have their course syllabi examined as evidence that deficiencies have been satisfied must submit a petition. The request will need to be submitted using the Petition for Reevaluation of Deficiency Course form along with supporting documents such as a syllabus, catalog description, and university transcripts (including the grade scale), to prove that you have met the requirements. Be advised that the documents you uploaded during the admission application have been evaluated, so a reevaluation petition should only be submitted if you have **new** information to provide. Once the petition has been reviewed, it is final. There will be no future petition or consideration request. If, after evaluation, the petition is not approved, the student may choose to take the deficiency test-out examination.

Option 2: Deficiency test-out exam an online course proficiency examination (CPE) is provided to allow students entering with deficiencies (listed in the admission letter) to take a test to establish whether

they possess basic knowledge of the course material sufficient to have an assigned deficiency waived. **The cost for each subject examination is $59, payable at the time of registration. This scheduled testing period is the only opportunity for deficiency test-outs. No other arrangements will be made for students to test out of assigned deficiencies.** There are no CPE exams for CSE 110, 205, and MAT 242.

Option 3: Enrolling in the course. Students who could not clear their assigned deficiency through the waiver process or deficiency test-out exam are required to enroll and pass the course(s) in their first year. A student has a total of two attempts to clear the deficiency. Deficiency courses must be completed with a grade of "B" or better. A grade of "B" or better in a course that follows a prerequisite class does not waive this requirement.

Pre-admission credits and Transfer credit – The graduate-level credit hours course must have grades of "B" or better and were not used toward a previous degree, per Graduate College policy. Pre-admission credits must have been taken within three years of admission to the ASU degree program to be accepted. A course with a grade of "Pass", "Credit", or "Satisfactory" is not acceptable for transfer. A student who wishes to transfer credits from another institution should contact a graduate advisor in the SCAI Advising Center to initiate the transfer credit process. Acceptance of transfer credit is at the discretion of the IE Program. See the Pre-Admission Credit section of the Graduate College Policies and Procedures Manual for more details. Approved transfer credit cannot count towards meeting the core requirement unless the credit was earned at ASU.

Transfer between Programs

A student who would like to change from a Ph.D. to a Master's or change from another Master's degree program should follow the Degree Change process. With approval, twelve credit hours are eligible for transfer into the Master's program with grades of "B" or better within the last three years.

Students who want to change from a Master's to a Ph.D. in Industrial Engineering must submit a new application to ASU Graduate Admissions. Admission to the Ph.D. program is not guaranteed. If admitted, the student is allowed to transfer only 12 credits of courses taken within the last three years with grades of "B" or better from the original uncompleted master's program to the new program. More than 12 credits require the CS Graduate Program Chair and the Dissertation Chair or co-chairs approval. Otherwise, a petition is needed. Students should familiarize themselves with the Graduate College pre-admission transfer policy.

VI.   MS degree requirements

Degree requirements for the MS include a minimum of 30 semester hours, not including deficiency courses and IEE 584 - CPT credits.

The MS is comprised of three major milestones, which all students are required to complete successfully prior to graduation:

   a) Completion of coursework.
   b) Filing an approved plan of study.
   c) Successful oral defense of an approved written thesis or a completion of a project portfolio.

a. Formulation of the Plan of Study
A student must submit a plan of study (iPOS) online through My ASU before the end of their first semester of attendance. The final iPOS is subject to approval by the Graduate Program Chair and, the supervisory committee for thesis students. Thesis students need to finalize their committee in their 3rd semester. After approval at the school level, the iPOS is forwarded to the Graduate College for final approval.

The iPOS must contain a minimum of 30 semester hours of approved graduate-level work. All 30 semester hours must be from formal course work (including IEE 594 and 598). Students need to be mindful of course anti-requisites at the time of registration. Specifically, students may not take and count both IEE 520 and CSE 572 due to to being classified as anti-requisites in the academic catalog due significant overlap between the courses.

In addition to meeting the requirements specified above, a student must also pass an oral thesis defense or complete a project portfolio.

The four **core courses** from the courses listed below **must be completed** by **the end of the 18th semester** hour applied to the Plan of Study (four of the first six POS classes). The four core courses include a course in Information Systems, a course in Simulation, a course in Industrial Statistics, and a course in Operations Research. These courses are intended to expose the student to the fundamental topics across the IE spectrum. A grade of "C" or better must be achieved in each core course. Please note the core is not intended solely as prerequisites for the following coursework; it also satisfies the breadth requirement for all graduates of our program.

1. IEE 505 – Information Systems Engineering or
    IEE 506 - Web-Enabled Decision Support Systems

2. IEE 545 – Simulating Stochastic Systems or
    IEE 561 - Production Systems

3. IEE 572 - Design of Engineering Experiments or
    IEE 573 – Reliability Engineering or
    IEE 578 – Regression Analysis

4. IEE 574 – Applied Deterministic Operations Research Models, or
    IEE 575 – Stochastic Operation Research

Non-Thesis students must complete 12 credits from the IE Area list. Thesis students must complete 12 or 9 credits from the IE Area list. The three IE Areas of Study are: Operations Research (OR)/Production Systems (PSL), Information Management & Systems (IMS), and Industrial Statistics (IS). Students may opt to customize their plan to focus on one specific area or take courses from different areas.

Additional elective courses, 500-level or above: Elective courses taken from other departments are encouraged but must be approved before enrolling in the course. Either IEE 541, 543 or 547 is permitted as an elective with approval.

A maximum of six credit hours of 400 level coursework may be used on an approved iPOS (400 level courses taken for a grade of Pass/Fail cannot be included on an iPOS). Students must get approval from the Program Chair before enrolling and completing a 400 level coursework, except for the course that is a deficiency requirement. Courses with grades of "D" (1.00) and "E" (0.00) cannot be included on an IPOS.

BS/MS Accelerated Program Students core requirements
Note: Students in the accelerated program may complete their master's degree in one year after completing their bachelors if they choose to do so. Students can share a maximum of 9 credit hours and can reserve 3 credit hours while completing their undergraduate degree. Refer to the maximum time limit to degree completion.

Satisfactory Progress as an Accelerated Graduate Student: All students must maintain a GPA of 3.0 or higher (Cumulative, Graduate and IPOS). If a student falls below a 3.0 GPA, they are placed on probation and provided with the timeframe in which the GPA must be raised to the satisfactory level. Students who do not raise their GPA to a 3.0 within the provided timeline risk dismissal from the program. **Note**: any 500 level courses taken as an undergraduate student will immediately count towards your satisfactory progress GPA calculation once you become a graduate student.

Portfolio requirement for culminating event: a project portfolio (see below the details for the project portfolio).

Eligibility requirement for the Project:
- A student must have a cumulative grade-point-average (GPA) of 3.0 over all coursework,
- 3.0 over all graduate coursework,
- 3.0 over all iPOS courses, and
- have completed all the deficiency courses with a grade of "B" or higher to take the Comprehensive Exam.

Portfolio (Non-Thesis): The portfolio includes requirement for a student to attend a total of three seminars recommended by IE Faculty IE Decision Systems Engineering seminars in the last year he/she graduates. Students will fill out the attendance form with a signature from an IE faculty or the speaker and turn in the forms from the three seminars at the end of the semester to the Canvas. Submissions will be evaluated by the IE GPC Committee.

MS Thesis Option: Students writing a 6-hour thesis (MS Degree) can reduce area course requirements by one course and eliminate one elective course, or they may alternatively eliminate two elective courses, but in either case must complete 24 hours of 500 level or higher courses. **A minimum GPA of 3.2 is required in the first 18 POS hours to pursue the MS thesis option.**

MS students writing a thesis require a research advisory committee comprised of at least three faculty members, including the committee chair. The chair must have PhD

dissertation committee chairing in IE graduate program to chair an MS thesis committee. The two additional members are chosen jointly by the committee chair and the student to facilitate the student's research. A least one additional member should be from the IE faculty. Please refer at the back of the handbook for a list of area faculty and their research.

For MS students, the thesis and a successful oral defense constitute their final examination. A majority pass vote by the student's committee is required. For visa reasons, international students have a maximum of two semesters to finish the thesis after completion of coursework listed in the iPOS.

A student must be enrolled in at least one graduate-level credit at the time of the defense. If holding the defense during the interim period between semesters, the student must be registered for the following semester. For example, if defending during the period between the spring and summer semester, you the student must be registered for the summer session. Please see the Graduate College policies.

Once the thesis is completed, the student will submit it to the committee members. There will be an open oral defense following the completion of the thesis. A student can schedule the defense after securing approval from the thesis chair and obtaining approval from Graduate College for the formatted thesis document. The student must schedule their defense through MyASU at least 10 working days prior to the defense date.

The Graduate College publishes information regarding thesis preparation, formal requirements, deadlines, and oral examinations. The student must comply with all guidelines that the Graduate College publishes regarding submitting a thesis and the scheduling of a thesis defense.

Students must be physically present at the oral defense of their thesis or dissertation. It is expected that oral defenses will be held on an ASU campus (for in-person defenses) and
during regular business hours (8am-5pm AZ Mountain Standard Time) to facilitate student, faculty, and public accessibility. A student has the option to include a virtual link to
encourage audience attendance. When there are sound educational reasons for holding a defense under different circumstances, contact the Graduate College for approval before scheduling the defense.

All members of a student's supervisory committee must attend the final oral defense of a thesis or dissertation. However, there are situations (e.g. faculty travel, faculty emergencies and/or faculty leave) that may necessitate holding a defense with one or more committee member(s) absent. The committee chair must be in attendance, but if a committee member cannot attend, a qualified substitute must be appointed to attend in their place. The substitute should be a regular faculty member within the academic unit. In these circumstances, the Graduate College must be notified with the name of the

member who will be absent, the faculty member who will attend as a substitute, and the student's name and ID number. This information must be submitted before the defense.

Once a defense has been scheduled and approved in the iPOS, students must submit within 10 days, a complete draft copy of the thesis/dissertation to be defended by uploading the document to their Interactive Plan of Study.

The supervisory committee evaluates the thesis and the student's performance on the defense. The committee votes the thesis as pass, pass with changes (major or minor), or fail. A decision to fail is final.

Steps to Preparing for Your MS Defense:
Before defense:
1. Obtain a consensus of approval from the committee chair and the committee members to proceed with the oral defense.
2. Schedule a date and time with your committee for the oral defense on MyASU.
3. Important: Ensure that a minimum of 50% of the official committee is physically present at the defense. If at least 50% of the committee cannot be physically present, the defense must be rescheduled.
4. Visit the Graduate College website https://graduate.asu.edu/completing-your-degree#tabs-0-content_main-5 to familiarize yourself with the dates and deadlines on format approval.

10 days prior to the defense: These steps are required to be completed prior to 10 working days from the date of oral defense.
1. Reserve a room with the SCAI administrative office (Brickyard 5th Floor).
2. Submit an electronic version of your abstract with title, full names of your committee members, defense date/time/place, and your name as you want it to appear on the defense announcement to the SCAI administrative office (Brickyard 5th Floor).
3. Schedule on MyASU your defense with the Graduate College.

On the day of the defense:
1. Set-up all your equipment at least one half-hour prior to your presentation to make sure they work properly.

After the defense:
1. Your committee will have comments and a discussion with you. At the end, the committee makes their recommendation: Pass, Pass with minor revisions, Pass with major revisions, or Fail.
2. Failing a thesis defense is final.
3. Revisions are normal and are expected to be completed within one year period. This includes remaining registered until the finished document has been uploaded through MyASU on ProQuest.
4. Follow the steps on MyASU on uploading your final dissertation through Graduate College and ProQuest.

VII.   General Information
a.   Research Standards for Publication of Thesis
Graduate research is the study of an issue that is of sufficient breadth and depth to be publishable in an IE-related journal. The effort should reflect a minimum of 750 hours of thoughtful work for a thesis (M.S.). The research should follow the 'scientific method' and thus be both objective and reproducible. The thesis should demonstrate independent, original, and creative inquiry. There should be predefined hypotheses or developmental goals and objectives that are measurable and can be tested. The document should demonstrate proficiency with written English and should conform to the Graduate College format guidelines. For more information on format guidelines, please visit the Graduate College web site https://graduate.asu.edu/completing-your-degree#tabs-0-content_main-5

b.   Financial assistance and/or fellowships
There are limited funds for MS students. We encourage students to pursue assistantships outside the IE and not limit their search to IE. Information regarding other sources of financial assistance is available on the following websites:
•   Financial aid: https://students.asu.edu/financialaid
•   Graduate College: https://graduate.asu.edu/pay-for-college
•   Fulton: https://graduate.engineering.asu.edu/graduate-fellowships/

c.   Continuous Enrollment and Leave of Absence Policies
Once admitted to a graduate degree program or graduate certificate program, students must be registered for a minimum of one credit hour during all phases of their graduate education, including the terms in which they are admitted and graduate. This includes periods when students are engaged in research, conducting a doctoral prospectus, working on or defending theses or dissertations, taking comprehensive examinations, taking Graduate Foreign Language Examinations or in any other way utilizing university resources, facilities or faculty time.

Registration for every fall semester and spring semester is required. Summer registration is required for students taking examinations, completing culminating experiences, defending theses or graduating from the degree program.

To maintain continuous enrollment, the credit hour(s) must:
•   Appear on the student's Interactive Plan of Study, OR
•   Be thesis (599), or continuing registration (595), OR
•   Be a graduate-level course
•   Be a deficiency course that is listed on the student's admit letter.

Grades of "W" and/or "X" are not considered valid registration for continuous enrollment purposes. "W" grades are received when students officially withdraw from a course after the drop/add period. "X" grades are received for audit courses. Additionally, students completing work for a course in which they received a grade of "I" must maintain continuous enrollment as defined previously. Graduate students have one year to complete work for an incomplete grade; if the work is not complete and the grade

changed within one year, the "I" grade becomes permanent and will remain on the students' transcripts. Additional information regarding incomplete grades can be found at asu.edu/aad/manuals/ssm/ssm203-09.html .

Medical/Compassionate Withdrawal: There are appropriate circumstances when students may need to withdraw from the university (i.e., medical withdrawal, compassionate leave). The policies for such withdrawals are the same for both undergraduate and graduate students. An approved Medical/Compassionate Complete Withdrawal is valid towards meeting the continuous enrollment policy.

d. Leave of Absence

Graduate students planning to discontinue registration for a semester or more must submit a request for a Leave of Absence through their iPOS. This request must be submitted and approved before the anticipated semester of non-registration. Students may request a maximum of two semesters during their entire program.

Having a Leave of Absence approved by the Graduate College will enable students to re-enter their program without re-applying to the university. Students who do not register for a fall or spring semester without an approved Leave of Absence are considered withdrawn from the university under the assumption that they have decided to discontinue their program. Students removed for this reason may re-apply for admission to resume their degree program; the application will be considered along with all other new applications to the degree program.

A student with a Graduate College-approved Leave of Absence is not required to pay tuition and/or fees, but in turn, is not permitted to place any demands on university faculty or use any university resources. These resources include university libraries, laboratories, recreation facilities, or faculty time.

e. Maximum Time Limit

Master's students must complete all program requirements within a six-year period. The six-year period starts with the semester and year of admission to the Master's program. Graduate courses taken prior to admission that are included in the plan of study must have been completed within three years of the semester and year of admission to the program. If coursework completed over 3 years ago is being applied towards a degree program as pre-admission coursework, the maximum time limit may be updated to reflect the start date of the pre-admission coursework.

Any exceptions must be approved by the supervisory committee (thesis students), Graduate Program Chair, and the Graduate College Dean. The Graduate College may withdraw students who are unable to complete all degree requirements and graduate within the allowed maximum time limit.

f. Maximum Credit Load

SCAI students on the Tempe campus are limited to a maximum of 11 credit hours per semester, unless they hold an RA/TA position. After the first semester, students in good academic standing may submit an overload request for permission to enroll in 12 credit

hours. The 12 credits are the maximum allowed credit enrollment for SCAI graduate students.

g. Registration requirements for research assistants (RA) and teaching assistants (TA)

Students awarded an assistantship within the Ira A. Fulton School of Engineering are required to be registered for 12 credit hours. Audit credit hours do not count toward the 12 credit hours.

Students who obtain an assistantship outside the Ira A. Fulton School of Engineering are required to be enrolled a minimum of 6 credit hours. Audit credit does not count toward the 6 credit hours. Enrollment in continuing registration (CSE 595) does not count toward the 6-hour requirement.

TAs and RAs are considered residents for tuition purposes. To be eligible for tuition remission, TAs and RAs must be employed for a minimum of 10 hours per week (25 percent Full-Time Equivalency {FTE}). TAs/RAs working 10-19 hours per week (25-49 percent FTE) receive a 50 percent remission of tuition for the semester or summer session of their employment. TAs/RAs working 20 hours per week (50 percent FTE) do not pay tuition during the semester of their employment. In addition, the university pays the individual health insurance premium for TAs and RAs working 20 hours per week (50 percent FTE). The TA/RA offer does not cover additional fees beyond tuition. In addition to a tuition waiver, students receive a stipend as specified in their offer.

The university provides an award covering the premium for individual health insurance for teaching and research assistants/associates who meet the minimum eligibility requirements during the duration of their appointment (coverage periods are August 16–January 15 and January 16–August 15). These are:
- appointment at 50% time (20 hours per week)
- hired as a TA or RA no later than the end of the eighth week of classes of the semester.

There are four ways a student can fulfill the TA English language requirement. Any of the following will fulfill the language requirement:
1. Take and pass the SPEAK test with a score of 55 or higher. Only SPEAK scores from Global Launch are allowed.
2. Take the iBT (Internet-based TOEFL) test and receive a score of 26 or higher on the oral portion of the test.
3. Take the IELTS test and receive a score of 8 or higher on the speaking portion of the test.
4. Complete the ITA Teacher Training Course with a score of 'certified.'

h. Satisfactory Progress, Academic Probation, Progress probation, and Withdrawal from the IE Program:

At the end of the student's first completed semester and every semester thereafter, the school will conduct an audit to determine if the student is maintaining the required minimum satisfactory progress, including progress on academic (GPAs and deficiencies) and probationary issues. Any student that is not in compliance with the satisfactory academic/ progress requirements is notified that she/he is either

- on academic probation and is given the next 9 credit hours or two semesters (fall and spring) to bring the GPA up to the proper level or
- on continued progress probation and is required to meet the conditions outlined in the continued probation letter.

Failure to properly remediate the GPA or the conditions outlined in the letter within the time frame will result in the school recommending that the student be dismissed from the program.

Note: Fully admitted students who take optional summer courses are placed on probation after the summer term if the earned grade(s) causes their GPA to fall below the satisfactory progress GPA minimum.

If applicable, the above-noted audit will also review each student's progress towards removing enrollment deficiency courses and/or any other degree requirement milestone(s). Failure to satisfactorily complete all deficiency course(s) and/or required milestones by the stipulated deadline may result in a recommendation for dismissal to the Graduate College.

Each semester, the Industrial Engineering Program reviews students' files for satisfactory progress towards completion of the degree. All students are placed on one of the four categories:
1. Satisfactory progress
2. Academic Probation
3. Progress probation
4. Withdrawal from the IE Program.

1. Satisfactory progress means that the student does not have any academic and progress probationary issues. In addition to the probationary rules, satisfactory progress includes communication each semester with the student's Committee Chair regarding his or her progress.

2. Academic Probation pertains to grades that might affect Program and University policies, including graduation. The following are notices/letters you will receive if one of these pertains to your academics:
- GPA below 3.0 in approved POS courses.
- Overall -post-baccalaureate GPA below 3.0.
- Overall graduate (500 level or above) GPA below 3.0.
- Deficiency course grade is below 3.0.

3. Progress probation pertains to issues dealing with making progress towards a degree. The following are notices/letters you will receive if one of these pertains to your academics:
- Lack of Progress toward removing deficiencies as listed on your admission letter.
- Lack of Progress toward completing the four Core courses within the first 18 hours of POS courses.
- Failure to pass the culminating event - Portfolio.
- Failure to staying in touch with your Thesis Chair in every semester.

4. A student is recommended for **withdrawal from the IE Program** if she or he fails to meet the probationary standards placed upon in the semester mentioned in the probationary letter. The student will receive a letter from the Industrial Engineering Program explaining the reasons for the withdrawal. The student will have **5 calendar days** from the date of the letter to appeal the decision. The IE Graduate Program Committee (GPC) will review the case and will make the necessary recommendation. The Graduate Program Chair, on behalf of the GPC, will provide a written explanation of the outcome. If the outcome is favorable, the student will have to meet all the outlined requirements at the end of the specified period. The student will be required to sign an agreement acknowledging the recommendations and the consequences if the agreements are not met. If the GPC recommends that the appeal is not granted in favor of the student, the Graduate Program Chair, on behalf of the GPC, will recommend to the Dean's Academic Affairs to withdraw the student from the IE Program. The student will then have the opportunity to appeal to the Ira A. Fulton Schools Standards Committee, which reviews the student's case and makes the final ruling to Associate Dean and the IE Program. If the appeal is not granted in favor of the student, the Dean's Academic and Student Affairs will recommend to the Graduate College to withdraw the student from the IE MS Program. Please refer to the Graduate College catalog on policies and procedures or contact the graduate advisor in the SCAI Advising Center.

i. Filing for Graduation
During the final semester, a student must file an application for graduation with the Graduation Office of the Registrar through My ASU. The student's approved final plan of study (iPOS) must be on file with Graduate College before the student can apply for graduation.

j. Academic Integrity

The highest standards of academic integrity are expected of all graduate students, both in academic coursework and related research activities. The failure of any graduate student to meet these standards may result in serious consequences, including suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies of individual schools as well as those of the university.

Violations of academic integrity include but are not limited to cheating, fabrication, tampering, plagiarism, or aiding or facilitating such activities. At the graduate level, students are expected to be familiar with these issues, and each student must take personal responsibility for their work. In addition, graduate students are expected to follow university guidelines related to the Student Code of Conduct. University policies related to academic integrity and code of conduct are available in the Office of the University Provost, or at https://provost.asu.edu/academic-integrity. Students also should be aware of Ira A. Fulton Schools resources related to academic integrity: https://engineering.asu.edu/integrity.

k. IEE 584 - Internship

Curricular Practical Training (CPT) is an academic experience usually obtained at off-campus work settings, allowing the student to apply knowledge and skills gained in various classes. It is intended as a unique, hands-on learning experience to provide students with several valuable skills that they can use upon graduation from their graduate degree programs. Accordingly, it is not available to full-time or part-time workers regularly employed by the company where the internship is proposed.

The CPT is available to both domestic and international students. However, international students must work with the International Students and Scholars Center (ISSC) and submit additional documentation to obtain work authorization. Furthermore, students are strongly encouraged to include a maximum of three one-credit hours of CPT course IEE 584 (1 credit hour) as an integral part of their Program of Study, reflected by their approved iPOS. These credits are not part of the 30 mandatory credits. Addition of the CPT course(s) should be done at the initial submission of the student's iPOS. The Internship course cannot be added to an approved iPOS once all coursework has been completed. Exceptions may be made if the internship is relevant to thesis research. The Graduate Program Chair will determine the need for a CPT internship in such cases in consultation with the Graduate Academic Advisor. Note that approval of an iPOS with the IEE 584 course confirms that the internship is an integral part of the degree requirements as planned by the student. Internship credit hours can be removed from the iPOS if not used at the time of graduation. Note: Only internship courses can be removed from the iPOS. Courses that are approved as part of the overall degree program in the iPOS can only be substituted with another approved course.

To be eligible for an internship, a student must be in good academic standing (cumulative, graduate and iPOS GPA of 3.00 or above) for two full semesters (summer semesters not included). International students need to be aware of immigration policies and regulations, which may jeopardize their academic status. Hence, it is strongly recommended for international students to consult with the International Students and Scholars Center (ISSC).

Who can participate:
All students (domestic and international) can participate in an out of state or an in-state internship, full time or part-time in the **summer sessions** if ALL of their GPA's (graduate, IPOS and CUM GPA) are at least a **2.5**.

Students with all GPAs between 3.0-3.24 may participate in an in-state internship part time only in the **fall and spring semesters**.

Students with all GPA's 3.25 or higher may participate in an out of state or in-state internship, part time or full time in the **fall and spring semesters**.

During the regular Fall and Spring semesters, international graduate students in F-1 status must register for a minimum of nine (9) credit hours to maintain full-time status. Required documents and forms for the internship proposal must be submitted to the SCAI Advising Office at least two weeks before the beginning of the semester in which the internship is planned. Students will not be able to request late-add registration of the IEE 584 Internship credit to their class schedule after the drop/add deadline of each semester. An approved proposal is required before commencing the internship. The request will include a statement from the employer that indicates they understand that the work is to satisfy a degree requirement. A sample letter and other required forms are available from the Graduate Advisor. Students must receive approval from their faculty advisor and the Graduate Program Director before registering for IEE 584. In order register for the IEE 584 - Internship, a student must have a cumulative, graduate and iPOS GPA of 3.00 or above and not have an academic integrity violation in a course for two full semesters (summer semesters not included) from the initial reporting of the incident. A final Plan of Study must be filed with the Graduate College showing the Internship course before registering for IEE 584. All application materials for an internship must be completed by the last day of regular registration for any semester. The student must take classes appearing on the Plan of Study the semester following the internship.

Renege: (verb) to fail to carry out a promise or commitment
It is unethical for students to continue to seek or consider other employment opportunities once an offer has been accepted. SCAI expects students to honor an acceptance and withdraw from all employment seeking activities. Students who accept an offer from an organization and later renege/decline the offer will be prohibited from further requesting future CPT pending a meeting with the Assistant Director.

A five-page final report is required at the end of the internship before a grade, and credit is given. The final report must be submitted to the reporting supervisor for comments and then to the faculty advisor for grade assignment. Refer to the SCAI website for guidelines to prepare the final report.

IEE 590 Reading and Conference
IEE 590 Reading and Conference (Independent Study) is available for MS students. The student cannot combine IEE 590, 584, and 581 as part of the Plan of Study. The student must get written approval from the supervising faculty outlining the coverage of the content.   The Independent Study form must be approved by the Graduate Program Chair, which will be placed in the student's file.

Student chapters of professional societies and engineering student organizations

Our graduate students are involved in many professional societies. Most branches of Industrial Engineering have professional societies associated with them. Participation in professional societies is an excellent road to career and interest group connections. Student membership typically costs less than $30 and includes many benefits including a monthly magazine. Professors will be happy to sign a membership form that will entitle a student to reduced rates. The professional society for all areas of Industrial Engineering is the Institute of Industrial Engineers (IIE). The ASU student chapter of IIE was the first student chapter formed in the Industrial Engineering Program and has a long history including many chapter awards. In 1999, a new student chapter of INFORMS, an operations research and management science professional society, was formed at ASU.

There are dozens of engineering student organizations and teams ranging from honors and professional associations to groups creating underwater robots and concrete canoes and launching rockets. Student organizations are excellent opportunities to learn about career possibilities as many of the student groups operate in conjunction with industry professional societies get involved! Please visit http://studentorgs.engineering.asu.edu/ for a list of engineering student organizations.

Instructional Concerns and Course-Related Complaints
Being part of a large university creates opportunities to learn from a diverse instructor population with different teaching styles and modalities for delivering course content. Courses are offered by a diverse set of faculty, including those who are research-intensive, those whose primary responsibility is teaching, and part-time faculty who are working in the field. Based on enrollment or modality of offering, faculty may also be supported by graduate student teaching assistants and graders. This diverse higher education delivery platform may differ significantly from the high school experience, and while it provides an opportunity to expand the student's ability to learn and develop problem-solving skills, concerns and conflicts with requirements and instructors may occasionally arise. SCAI students with instructional concerns should review and adhere to the following guidelines for attempting to resolve their issues. First and foremost, keep in mind that the faculty and advising staff are experienced, dedicated educators that are here to help you achieve your educational goals but at the same time, as an engineering and computer science program, they have a responsibility to ensure standards are maintained and student outcomes are achieved before graduation. The university culture recognizes the value of diversity in multiple dimensions as well as the presumption of expertise and academic freedom of the faculty.

with your Instructor
If you have a difference of opinion with your instructor, teaching assistant (TA) or graduate support assistant (GSA) or have concerns about technical or administrative aspects of the course, visit the instructor or TA/GSA during office hours or contact them via email (if you cannot visit them during the office hours). Express your concerns clearly and respectfully and ask for help. Be sure to provide concise information about what you have trouble understanding in the course or your concern. Instructors and GSA or TAs are here to help. Remember that you are responsible for prerequisite knowledge/skills required for a course and regularly studying the material taught in the

course. The teaching staff may not be able to help you with your problem if you lack the prerequisite knowledge/skills or have not been keeping up with the course material. As a guideline, for a 15-week course, you should spend three hours study time every week for each hour of course credit. Thus, you should schedule 8-10 hours each week to devote to each 3-credit course. For a 7.5-week course, students should be prepared to spend 6 hours a week on coursework for every 1-course credit. So, you should expect to spend approximately 18 hours a week on coursework for a three-credit course. Also, make sure to resolve the issues as soon as they occur and maintain all documentation. For example, if the assignment instructions are not clear, get the clarification on the day the assignment is assigned and not wait until the assignment's deadline.

If you are still having problems in the course after communicating with your instructor, TA or GSA, connect with your academic advisor to understand your options moving forward.

Connect with your Program Chair
If you are unable to resolve the concern after initial contact with the instructor GSA or TA, and you have met with your academic advisor, you should then connect with the program chair for your degree (or the department offering the course). The program chair will confer with the instructor and/or GSA/TA to better understand the concern and try to resolve the problem. Please note that before meeting with the program chair, you should have made a reasonable effort to meet with the course instructor (not just the support GSA or TA) and get the issue resolved. When contacting the program chair, provide all the relevant details such as the course syllabus, assignment handout, email exchange with the instructor, etc., so that the program chair can promptly act on your concerns. Please be brief and precise in the description of your concerns. In some cases, the graduate program chair would like to meet you. When coming for the meeting, bring along all the relevant documents.

If the instructional concern is not resolved with the program chair or the department offering the course, contact the Associate Dean of Academic Affairs Office for the college offering the course for assistance through the grade grievance process https://engineering.asu.edu/grade-grievance/ .

Remain Focused
When faced with instructional concerns, it is important to remain focused on the rest of the course while addressing specific areas that are under review. Be sure to stay connected with your academic advisor if there are any changes in your situation.
NOTE:
  • Misrepresentation of facts or disrespectful behavior when confronting your instructor teaching assistant is considered an academic integrity violation
  • Maintain all documentation.
  • Act proactively and promptly.

In Summary, Guidelines for Avoiding Problems
  • Be sure you have the necessary prerequisite knowledge before starting a course;
  • Attend class and on-line exercises regularly;

- Devote time each week to studying to avoid getting behind;
- Contact the TA (if assigned) or instructor during office hours at first sign of trouble and come prepared to ask precise questions and to explain your difficulty.
- Accept the fact that you grow intellectually and professionally by being challenged and learning to deal with diverse expectations and environments.

Process for Resolving Conflicts in Grading, Course Expectations, etc.
- Contact the TA or GSA (if available) or instructor to explain your concern and seek resolution;
- If the TA/instructor has attempted to assist you, but you are still having an academic difficulty that is causing personal stress or hindering your academic success, see your academic advisor;
- If the TA/instructor is not responsive or does not provide a legitimate response/accommodation, then contact your Program Chair.
- If you still feel there is a legal, ethical or procedural violation that is victimizing you, contact the Office of the Associate Dean of Engineering for Academic Affairs.
- Circumventing this process will be considered a violation of professional ethics and protocol.

Appendix I - Absent Committee Member Procedure

While it is desirable that all members of a student's supervisory committee be available during the oral exam, prospectus and final dissertation defense, there are situations (e.g., faculty travel, faculty emergencies and/or faculty leave) that may necessitate holding the oral exam, prospectus, or final dissertation defense with one or more committee member(s) absent. The Academic Unit has established the following policies and procedures for such cases.

1. A minimum of 4 committee members (including chair/co-chair) from the student's official committee must be available during the student's oral exam, prospectus, and final dissertation defense.
2. A minimum of 50% of the student's official committee must be physically present with the student at the oral exam, prospectus, and final dissertation defense. If at least 50% of the committee cannot be physically present, the exam/defense must be rescheduled.
3. The chair (or one co-chair) must be available for the oral exam, prospectus, and final dissertation defense. If this is not possible, the exam/defense must be rescheduled.
4. The chair or (one co-chair) must be physically present at the oral exam, prospectus, or final dissertation defense. If this is not possible, the exam/defense must be rescheduled. The student cannot submit a committee change after the defense is scheduled to create co-chairs in the case of an absent chair.
5. A committee co-chair or member who cannot be available during the oral exam, prospectus, or final dissertation defense, may participate in one of three ways. These options are listed in the order of preference:
   a. The absent committee member videoconferences into the oral exam defense location.*
   b. The absent committee member teleconferences into the oral exam defense location.*
   c. The absent committee member provides a substitute to be physically present (approved by the committee chair & the head of the academic unit) for the oral exam, prospectus, or final dissertation defense. The substitute must be someone who is approved to serve on graduate supervisory committees for that program. The absent committee member should provide the substitute questions, in writing, to be asked at the exam/defense. The substitute, although respecting the opinions expressed by the regular committee, must be free to use his/her judgment in voting on whether the student passes or fails the defense. The substitute should sign the absent committee member's name, and add his/her initials directly after the signature.

   *The defense location must have the necessary equipment to accommodate video/teleconference materials.
   *Students must provide a copy of their document and any other supporting presentation materials to the committee member at least 5 working days in advance of the defense. The defense location must have the necessary equipment to accommodate video/teleconference materials.

If the videoconference or teleconference option is selected, the absent member needs to e-mail the committee chair or co-chair to state that member voted to pass or fail the student and authorize that the chair signs their name on the form. The committee chair or co-chair should sign the name of the absent individual on the form and then add his/her initials directly after the signature.

If a committee member is absent from the oral defense, the student or committee chair/co-chair must notify the Program Chair before or at the time of scheduling the oral exam defense. If the student is notified of absence after scheduling the oral exam, the student must contact the Program Chair before the oral exam defense date, so he/she finds a substitute.

For the final dissertation defense, if a committee member will be absent from the defense, the student or committee chair/co-chair must notify Graduate College before or at the time of scheduling the defense. If the student is notified of absence after scheduling the defense, the student must contact Graduate College before the defense date.