Ira A. Fulton Schools of Engineering

Arizona State University

Artificial Intelligence Engineering
An Interdisciplinary Graduate Program

Master of Science (MS)
Graduate Student Handbook
2025 - 2026 Academic Year
Updated March 30, 2026

ai-ms.engineering.asu.edu

Summary of updates

As of October 20, 2025 two new programs were launched for the spring 2026 semester. The handbook was updated to include the two new programs, the software engineering and materials science engineering concentrations. No other degree requirements were changed for the fall 2025 or spring 2026 semester.

As of October 29, 2025, language was added about the maximum number of credits a student can take in a semester, the rationale behind the policy, and the petition process.

On November 14, 2025, a link to the elective list was added, the portfolio language was updated to remove mention of the AI Concentration, and the academic preparation was updated to include CSE 205.

On January 13, 2026, the Aerospace Engineering concentration was added to the handbook.

On March 17, 2026, the Intelligent Biomedical Systems Engineering concentration was added to the handbook and the culminating experiences for the software engineering concentration were updated.

On March 30, 2026, the Sustainable Engineering and the Built Environment concentration was added to the handbook.

Program Overview

The use of Artificial Intelligence (AI) approaches, including machine learning, natural language processing, computer vision, robotics, pattern recognition, etc., is becoming widespread in many fields including all engineering disciplines. The proposed degree combines advanced study in AI

approaches with deep domain expertise in the student's chosen branch of engineering. Students will learn how to develop and customize relevant AI approaches, such as those mentioned above, to engineering problems within their concentration. Students will apply to one of the concentrations in the program and take classes across the Ira A. Fulton Schools of Engineering to become experts in the field of AI in their branch of engineering.

Program Admission Information

An applicant must fulfill the requirements of both the ASU Graduate College and the Ira A. Fulton Schools of Engineering.

Eligibility and GPA Requirements

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in computing, engineering, mathematics, information technology, or a related field from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or they must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

An applicant whose native language is not English must demonstrate proficiency in the English language by scoring at least 90 on the TOEFL iBT, 7 on the IELTS, or 115 on the Duolingo English test.

The GRE is not required.

Application Deadlines

Applications will be considered at all times, however, international applicants are encouraged to take into account visa processing time requirements for their country of origin. An application is complete after all materials are received by Graduate Admissions.

Application requirements

Applicants are required to submit:

1. graduate admission application and application fee
2. official transcripts
3. written statement
4. professional resume
5. proof of English proficiency (for international applicants)

Recommended Academic Preparation

All applicants must demonstrate relevant coursework or experience in the following three areas:

- Undergraduate linear algebra (e.g., MAT 242 Elementary Linear Algebra) and Calculus 1, 2, and 3.
- 300 level courses relevant to the concentration you are applying to. For example, the EE concentration requires EEE 350 or equivalent. Concentrations might require additional prerequisite courses. Applicants should reach out to the academic advising office for the concentration they are interested in for more information.
- Familiarity with Matlab, Python, SQL, R, or other relevant programming skills (in the professional resume) or a course equivalent to CSE 205 Object-Oriented Programming.

Program Requirements

Each concentration has different degree requirements. Note that all students start as non-thesis and can change to thesis if they find a faculty member who is willing to oversee their research. The common core courses are required for all concentrations, while each of the concentrations has specific requirements for its required concentration courses. Note that students might need to submit override requests for certain classes, following that academic program's policies and procedures.

The program curriculum is broken down into four categories of courses- common core, concentration, elective, and culminating event. Please refer to the lists below for each concentration regarding their concentration and elective courses. All concentrations have the same common core courses.

In total, this program requires at least 30 credits or 10 regular courses (3 credits per course). If students take a course with less than 3 credits, they need to take an additional course to ensure that at least 30 credits have been completed.

Common Core courses

Each student must complete 12 credits in core courses, with 3 credits from each of the three listed items below.

- FSE 561 Artificial Intelligence Ethics and Social Responsibility (3)
- **AI Engineering Foundations- select one course from the list below**
    - AME 515 Machine Vision and Pattern Recognition (3)
    - CSE 571 Artificial Intelligence (3)
    - CSE 575 Statistical Machine Learning (3)
    - CSE 576 Topics in Natural Language Processing (3)
    - EEE 511 Artificial Neural Computation (3)
    - EEE 515 Machine Vision and Pattern Recognition (3)
    - EEE 560 Mathematical Foundations of Machine Learning (3)

    - FSE 560 Artificial Intelligence Engineering Foundations (3)
    - RAS 585 Machine Learning and Artificial Intelligence (3)
    - STP 550 Statistical Machine Learning (3)
- **AI Systems and Tools- select one course from the list below**
    - ACT 561 Machine Learning and Risk Management Applications (3)
    - AME 534 Machine Learning for Media Arts (3)
    - CEE 501 Machine Learning Techniques in Civil Engineering (3)
    - CSE 578 Data Visualization (3)
    - EEE 511 Artificial Neural Computation (3)
    - EEE 549 Statistical Machine Learning: From Theory to Practice (3)
    - IFT 536 Natural Language Processing for Information Technology (3)
    - MAE 551 Applied Machine Learning for Mechanical Engineers (3)
    - MFG 523 Artificial Intelligence for Smart Manufacturing (3)
    - MSE 551 Applied Machine Learning for Mechanical Engineers (3)
- **Data Collection and Evaluation for AI Systems- select one course from the list below**
    - EEE 554 Probability and Random Processes (3)
    - IEE 520 Statistical Learning for Data Mining (3)
    - IFT 511 Analyzing Big Data (3)
    - IFT 512 Advanced Big Data Analytics/AI (3)
    - CEE 579 Transportation Data Collection and Analysis Methods (3)
    - ACO 501 Database Systems and Problem Solving in Python (3)
    - CHM 547 Data Modeling for the Natural Sciences (3)
    - CSE 510 Database Management System Implementation (3)
    - CSE 511 Data Processing at Scale (3)
    - CSE 512 Distributed Database Systems (3)
    - CSE 515 Multimedia and Web Databases (3)
    - CSE 572 Data Mining (3)
    - DSE 501 Statistics for Data Analysts (3)
    - GIS 531 Spatial Databases (3)
    - HSE 531 Data Analytics: Modeling Human Subjects Data (3)
    - IEE 577 Data Science for System Decision Analytics (3)

Aerospace Engineering concentration (School for Engineering of Matter, Transport and Energy)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- MAE 551- Applied Machine Learning for Mechanical Engineers (3)
- Two courses from the following list
    - MAE 503 - Finite Elements in Engineering (3)
    - MAE 510 - Dynamics and Vibrations (3)

- MAE 515 - Structural Dynamics (3)
- MAE 521 - Structural Optimization (3)
- MAE 524 - Theory of Elasticity (3)
- MAE 548 - Probabilistic Methods for Mechanical Analysis (3)
- MAE 557 - Mechanics of Composite Materials (3)
- MAE 561 - Computational Fluid Dynamics (3)
- MAE 563 - Aircraft Propulsion (3)
- MAE 564 - Advanced Aerodynamics (3)
- MAE 565 - Rocket Propulsion (3)
- MAE 566 - Rotary-Wing Aerodynamics (3)
- MAE 570 - Intermediate Thermodynamics (3)
- MAE 571 - Fluid Mechanics (3)
- MAE 575 - Turbulence (3)
- MAE 581 - Advanced Thermodynamics (3)
- MAE 582 - Renewable Energy: Mechanical Systems (3)
- MAE 586 - Advanced Heat Transfer (3)
- MAE 587 - Radiation Heat Transfer (3)
- MAE 589 - Heat Transfer (3)

Electives (3, 6 or 9 credits, depending on the culminating event)
The 3 or 6 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3 or 6 credit hours)
Portfolio (0)
MAE 593 Applied Project (3)
MAE 599 Thesis (6)

Chemical Engineering concentration (School for Engineering of Matter, Transport and Energy)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)
- CHE 533 - Transport Processes I (3)
- CHE 543 - Thermodynamics of Chemical Systems (3)
- CHE 544 - Chemical Reactor Engineering (3)

Electives (3 or 6 credits, depending on the culminating event)
The 3 or 6 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study.

Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (3 or 6 credit hours)
CHE 593 Applied Project (3)
CHE 599 Thesis (6)

Electrical Engineering concentration (School of Electrical, Computer and Energy Engineering)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- EEE 554 Probability and Random Processes (3)
- EEE 560 Mathematical Foundations of Machine Learning (3)
- One course from the following list
    - EEE 506 Digital Spectral Analysis (3)
    - EEE 510 Multimedia Signal Processing (3)
    - EEE 511 Artificial Neural Computation (3)
    - EEE 515 Machine Vision and Pattern Recognition (3)
    - EEE 516 Physics-Based Computer Vision (3)
    - EEE 556 Detection and Estimation Theory (3)
    - EEE 559 Wireless Networks (3)
    - EEE 585 Security and Privacy in Networked Systems (3)
    - EEE 589 Convex Optimization (3)
    - EEE 508 Digital Image and Video Processing and Compression (3)
    - EEE 551 Information Theory (3)
    - EEE 509 DSP Algorithms and Software (3)

Electives (3 or 9 credits, depending on the culminating event)
The 3 or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0 or 6 credit hours)
Portfolio (0)
EEE 599 Thesis (6)

Human Centered AI concentration (The Polytechnic School)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (12 credits)

- HSE 520 Methods and Tools in Applied Cognitive Science (3)
- HSE 530 Intermediate Statistics for Human Systems Engineering (3)
- HSE 531 Data Analytics: Modeling Human Subjects Data (3)
- HSE 542 Foundations of Human Systems Engineering (3)

Electives (3, 6, or 9 credits, depending on the culminating event)

The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3, or 6 credit hours)

Portfolio (0)
HSE 593 (3)
HSE 599 Thesis (6)

Intelligent Biomedical Systems Engineering concentration (School of Biological and Health Systems Engineering)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- BME 510 - Biomechanics/Human Physical Capability (3)
- Two classes from the following list
    - BME 507 - Image Processing and Analysis (3)
    - BME 521 - Advanced Motor Neuroscience for Engineers (3)
    - BME 522 - Reengineering the U.S. Health Care Delivery System (1)
    - BME 524 - Systems Biology of Disease (3)
    - BME 525 - Surgical Techniques (2)
    - BME 526 - Introduction to Neural Engineering (3)
    - BME 527 - Biomedical Device Design (3)
    - BME 531 - Biomedical Innovation I: Clinical Needs Assessment (3)
    - BME 532 - Biomedical Innovation II: Product Design and Prototyping (3)
    - BME 533 - Biomedical Innovation III: Product Development and Commercialization (3)
    - BME 541 - Clinical Innovation I: Clinical Immersion Experience (4)
    - BME 542 - Clinical Innovation II: Product Design Experience (4)
    - BME 543 - Clinical Innovation III: Product Development Experience (4)
    - BME 556 - Human Systems Neuroscience (4)
    - BME 561 - Clinical Neuroscience (3)
    - BME 564 - Cyber Biomedical Systems (3)

- BME 565 - Magnetic Resonance Imaging (3)
- BME 566 - Medical Imaging Instrumentation (3)
- BME 567 - Tissue Engineering and Regenerative Medicine (3)
- BME 568 - Human Factors and System Design in Assistive Technologies (3)

Electives (3 or 6 credits, depending on the culminating event)
The 3 or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (3 or 6 credit hours)
BME 593 (3)
BME 599 Thesis (6)

Manufacturing concentration (School of Manufacturing Systems and Networks)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)
- MFG 523 - Artificial Intelligence for Smart Manufacturing (3)
- Two courses from the following list
  - MFG 510 - Manufacturing Systems Management (3)
  - MFG 522 - Intermediate Engineering Statistics (3)
  - MFG 524 - Engineering Computing with Python (3)
  - MFG 545 - Modern Manufacturing Methods (3)
  - MFG 546 - Nondestructive Testing (3)
  - MFG 573 - Micro/Nano Additive Manufacturing (3)
  - MFG 574 - Polymer Science and Additive Manufacturing (3)
  - MFG 575 - Design for Additive Manufacturing (3)
  - MFG 581 - Simulating Manufacturing Systems (3)
  - MFG 582 - Metal Additive Manufacturing (3)

Electives (3, 6, or 9 credits, depending on the culminating event)
The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3, or 6 credit hours)
Portfolio (0)
MFG 593 Applied Project (3)

MFG 599 Thesis (6)

Materials Science and Engineering concentration (School for Engineering of Matter, Transport and Energy)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (12 credits)

- MSE 551- Applied Machine Learning fo rMechanical Engineers (3)
- Two courses from the following list
    - MSE 501 - Linear Algebra in Engineering (3)
    - MSE 502 - Partial Differential Equations in Engineering (3)
    - MSE 503 - Concepts in Materials Science (3)
    - MSE 510 - Introduction to Materials Characterization (3)
    - MSE 511 - Mathematical and Computer Methods in Materials (3)
    - MSE 513 - Polymers and Composites (3)
    - MSE 514 - Advanced Metallurgical Alloys and Processes (3)
    - MSE 515 - Introduction to Electronic, Magnetic, and Optical Properties (3)
    - MSE 516 - Mechanical Behavior of Materials (3)
    - MSE 517 - Introduction to Ceramics (3)
    - MSE 519 - Growth and Processing of Semiconductors (3)
    - MSE 523 - Structural and Mechanical Properties of Materials (3)
    - MSE 524 - Advanced Thermodynamics (3)
    - MSE 525 - Fundamentals of Electrical, Optical, and Magnetic Materials and Device Applications (3)
    - MSE 526 - Materials Physics I (3)
    - MSE 527 - Materials Physics II (3)
    - MSE 535 - Computational Materials Science and Engineering (3)
    - MSE 540 - Fracture, Fatigue, and Creep (3)
    - MSE 546 - Surfaces and Thin Films (3)
    - MSE 548 - Fundamentals of Semiconductor Packaging (3)
    - MSE 550 - Advanced Materials Characterization (3)
    - MSE 552 - Electron Microscopy I (3)
    - MSE 553 - Electron Microscopy Laboratory I (3)
    - MSE 554 - Electron Microscopy II (3)
    - MSE 555 - Electron Microscopy Laboratory II (3)
    - MSE 560 - Nanomaterials in Energy Production and Storage (3)
    - MSE 561 - Phase Transformations, Kinetics, and Diffusion in Solids (3)
    - MSE 566 - Electrochemical Energy Storage and Conversion (3)
    - MSE 571 - Quantum Physics (3)
- One course from the following list
    - MSE 523 - Structural and Mechanical Properties of Materials (3)
    - MSE 524 - Advanced Thermodynamics (3)

    - MSE 525 - Fundamentals of Electrical, Optical, and Magnetic Materials and Device Applications (3)
    - MSE 526 - Materials Physics I (3)
    - MSE 527 - Materials Physics II (3)
    - MSE 535 - Computational Materials Science and Engineering (3)
    - MSE 540 - Fracture, Fatigue, and Creep (3)
    - MSE 546 - Surfaces and Thin Films (3)
    - MSE 548 - Fundamentals of Semiconductor Packaging (3)
    - MSE 550 - Advanced Materials Characterization (3)
    - MSE 552 - Electron Microscopy I (3)
    - MSE 553 - Electron Microscopy Laboratory I (3)
    - MSE 554 - Electron Microscopy II (3)
    - MSE 555 - Electron Microscopy Laboratory II (3)
    - MSE 560 - Nanomaterials in Energy Production and Storage (3)
    - MSE 561 - Phase Transformations, Kinetics, and Diffusion in Solids (3)
    - MSE 566 - Electrochemical Energy Storage and Conversion (3)
    - MSE 571 - Quantum Physics (3)
- Note that some courses are on both of the above lists. A course can only count in one section. For example, if a student were to complete MSE 571, they would still need to complete another course from one of the above lists.

Electives (0 or 3 credits, depending on the culminating event)
The 0 or 3 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (3 or 6 credit hours)
MSE 593 (3)
MSE 599 Thesis (6)

Mechanical Engineering concentration (School for Engineering of Matter, Transport and Energy)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)
- MAE 551 Applied Machine Learning for Mechanical Engineers (3)
- Two courses from the following list
    - MAE 503 Finite Elements in Engineering (3)
    - MAE 506 Advanced System Modeling, Dynamics, and Control (3)
    - MAE 510 Dynamics and Vibrations (3)
    - MAE 514 Vibration Analysis (3)

- MAE 518 Fundamentals of Semiconductor Packaging (3)
- MAE 519 Mechanics of Micro/Nano Systems (3)
- MAE 520 Stress Analysis (3)
- MAE 536 Combustion (3)
- MAE 545 Modern Manufacturing Methods (3)
- MAE 547 Modeling and Control of Robots (3)
- MAE 560 Applied Computational Fluid Dynamics (3)
- MAE 570 Intermediate Thermodynamics (3)
- MAE 571 Fluid Mechanics (3)
- MAE 573 Advanced Fluid Mechanics (3)
- MAE 576 Energy Efficiency (3)
- MAE 579 Wind Energy (3)
- MAE 582 Renewable Energy: Mechanical Systems (3)
- MAE 588 Nanoscale Heat Transfer (3)
- MAE 589 Heat Transfer (3)

Electives (3, 6, or 9 credits, depending on the culminating event)
The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3, or 6 credit hours)
Portfolio (0)
MAE 593 (3)
MAE 599 Thesis (6)

Operations and decision science concentration (School of Computing and Augmented Intelligence)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (12 credits)

- IEE 505 - Information Systems Engr (3)
- One course from the following list
  - IEE 545 - Advanced Simulating Stochastic Systems (3)
  - IEE 561 - Production Systems (3)
- One course from the following list
  - IEE 572 - Design Engineering Experiments (3)
  - IEE 573 - Reliability Engineering (3)
  - IEE 578 - Regression Analysis (3)
- One course from the following list
  - IEE 574 - Appl Deterministic Oper Rsch (3)

    - IEE 575 - Appl Stochastic Oper Rsch Mdls (3)

Electives (0 or 6 credits, depending on the culminating event)
The 0 or 6 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0 or 6 credit hours)
Portfolio (0)
IEE 599 Thesis (6)

Robotics concentration (School of Manufacturing Systems and Networks)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- RAS 585 Machine Learning and Artificial Intelligence (3)
- Two courses from the following list
    - RAS 507 Image Processing and Analysis (3)
    - RAS 545 Robotic Systems I (3)
    - RAS 546 Robotic Systems II (3)
    - RAS 550 Mechatronic Systems (3)
    - RAS 555 Mechatronics Device Innovation (3)
    - RAS 556 System Control and Optimization (3)
    - RAS 557 Foldable Robotics (3)

Electives (3, 6, or 9 credits, depending on the culminating event)
The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3, or 6 credit hours)
Portfolio (0)
RAS 593 (3)
RAS 599 Thesis (6)

Software Engineering concentration (School of Computing and Augmented Intelligence)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- Three courses from the following list
    - SER 501 - Advanced Data Structures and Algorithms (3)
    - SER 502 - Emerging Languages and Programming Paradigms (3)
    - SER 515 - Foundations of Software Engineering (3)
    - SER 531 - Semantic Web Engineering (3)
    - SER 541 - Data Science for Software Engineers (3)

Electives (3, 6, or 9 credits, depending on the culminating event)
The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (3 or 6 credit hours)
SER 517 (3)
SER 599 Thesis (6)

Sustainable Engineering and the Built Environment concentration (School of Sustainable Engineering and the Built Environment)

In addition to the core courses listed above, students must complete the following degree requirements.

Concentration courses (9 credits)

- CEE 501 - Artificial Intelligence for Civil Engineers (3)
- Two courses from the following list
    - CEE 532 - Developing Software for Engineering Applications (3)
    - CEE 548 - Advanced Environmental Analysis (3)
    - CEE 578 - Activity-Travel Behavior Modeling (3)
    - CEE 579 - Transportation Data Collection and Analysis Methods (3)
    - EVE 568 - Environmental Risk Assessment (3)

Electives (3, 6, or 9 credits, depending on the culminating event)
The 3, 6, or 9 credit hours for electives must be from the approved list of electives. Coursework selected for Required Core may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

Culminating Experience (0, 3, or 6 credit hours)
Portfolio (0)
CEE/CON/EVE 593 (3)
CEE/CON/EVE 599 Thesis (6)

Elective list for all concentrations

Electives can be any course listed as a concentration or core course for any concentration. Courses cannot “double count” in two requirements for the program. For example, if a student were to take EEE 554, a core course option, it could not count as core and elective. If a student would like a course to be reviewed that is not already listed in this handbook, they should contact their assigned academic advisor.

The approved elective list can be found here. If a student would like to take a class that is not on this list, they should reach out to their assigned advisor with the course information, the syllabus, and justification as to how this class applies to their program.

Reading and conference
Reading and Conference (EEE 590/MAE 590/HSE 590/RAS 590) might be approved in certain situations. Reading and Conference is an independent study in which a student meets regularly with a faculty member to discuss assignments. The course may include such assignments as intensive reading in a specialized area, writing a synthesis of literature on a specified topic, or writing a literature review of a topic. Not all requests for Reading and Conference will be approved. The appropriate form needs to be submitted to the student’s advising office prior to the end of the registration period in which they are requesting the course. Reading and Conference can only be completed one time for up to 3 credits or less that would count as elective credits for the student’s plan of study. Only currently non-thesis and applied project students may request a Reading and Conference course. Many faculty and students will utilize Reading and Conference as a way to determine if doing a thesis together will work. Once a student is working on their thesis under a faculty’s supervision, they should not use Reading and Conference as an elective since they should be registered for thesis credits instead. Reading and Conference credits are concentration-specific and can NOT be transferred to other concentrations.

Culminating event descriptions and requirements

Portfolio

The portfolio is the default option for all students in the program.

The Portfolio is a sample of the significant projects that a graduate student has carried out during his/her graduate studies showcasing the quality of the graduate education he/she has received. Students choosing the MS portfolio option must select three significant projects from previously completed graduate AIE concentration coursework listed on their approved iPOS. When submitting the portfolio, students should include the following:

- A cover page which includes the student’s name, program and date.
- An executive summary of each project, why each project was selected, and whether they were single or group projects. If group projects were chosen, students need to describe their individual contribution.

- The original projects. These can include PDFs, power points, and/or word documents.

The Graduate Program Chair will be solely responsible for judging the quality of the portfolio and determining if it is satisfactory for the required culminating event.

Applied Project- Grade of B or better required

An applied project is a research experience that is completed in your final semester under the guidance of a faculty advisor. Your faculty advisor will outline a set of deliverables that must be completed to satisfy your culminating event requirements. You must be pre-approved to register for the applied project course. If you are interested in pursuing an applied project, schedule an appointment with your academic advisor.

Thesis

The thesis option is the research master's degree. A member of the corresponding Graduate Faculty (with co-chair or chair status as specified on the AI MS Website) must agree to serve as the program committee chair (faculty advisor) for a student to be transferred to the MS thesis degree program. The Graduate Academic Advising Office will need to have confirmation in writing (email is acceptable) from the faculty member agreeing to serve as the thesis chair before a plan change is made to move to the MS thesis degree. The faculty that is serving as the committee chair, in consultation with the student, will establish the full committee. It must be composed of a minimum of three members from the ASU faculty with at least two being from the AI MS Faculty. If the committee chair has co-chair status on the graduate faculty, the program committee must include an AI MS faculty member with the chair or co-chair status serving as second co-chair. Participation of individuals from institutions external to ASU is encouraged but must be approved by the Graduate Program Chair and the Graduate College.

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 the student's committee chair has approved the student's thesis format. The student must schedule their defense through their iPOS at least 10 working days prior to the defense date.

The supervisory committee evaluates the thesis and the student's performance on the defense. The committee accepts the thesis, accepts it with changes, or rejects it. A rejected decision is final.

Steps to Preparing for Your Defense

Prior to defense:

1. Obtain a consensus of approval from the committee chair and members to proceed with the oral defense.
2. Schedule a date and time with your committee for the oral defense.
3. Important: Ensure that a minimum of 50% of the official committee be physically present at the defense. If at least 50% of the committee cannot be physically present, the defense must be rescheduled. Please see Appendix I for Absent Committee Member Procedures

4. Visit the Graduate College website to become familiar with the dates and deadlines on format approval and oral defense.

10 days prior to the defense:
These steps are required to be completed at least 10 working days prior to the date of oral defense.

1. Reserve a room with the unit concentration you are pursuing. Consult with your academic advisor on how to do this.
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 within your unit for announcement purposes. (See the unit academic advisor)
3. Schedule your defense through your iPOS at least 10 working days prior to the defense with the Graduate College.

On the day of the defense:

1. Set up all your equipment at least one half-hour before your presentation to make sure they work.

After the defense:

1. Your committee will discuss the results of the exam with you and may have additional comments for you. In the end, the committee will make a recommendation: Pass, Pass with minor revisions, Pass with major revisions, or Fail.
2. A fail decision is final.
3. Revisions are normal and are expected to be completed within one year. This includes remaining registered until the finished document has been uploaded to ProQuest.
4. Follow the steps on My ASU for uploading your final thesis through the Graduate College and ProQuest.

Curricular Practical Training (CPT) and Optional Practical Training (OPT)

Curricular Practical Training

Internship (CPT) is an academic experience usually obtained at off-campus locations. CPT allows students to apply knowledge and skills gained in coursework to professional settings. It is intended as a unique, hands-on learning experience to provide students with valuable skills that they can use upon graduation. Accordingly, it is not available to full-time or part-time workers regularly employed by the company where the internship is proposed.

Internship (CPT) is available to both domestic and international students. International students need to be aware of immigration policies and regulations to not jeopardize their academic status. It is strongly recommended that international students consult the International Students and Scholars Center (ISSC). Students will be required to submit the required documentation to obtain work authorization from ISSC.

The internship (CPT) experience (up to three 1-credit CSE 584/EEE 584/HSE 584/MAE 584/RAS 584) must be included as part of the student's Program of Study. It is highly recommended that the internship (CPT) course(s) be listed at the initial submission of the student's iPOS during the first semester of study.

Internship (CPT) should occur prior to the student completing the required 30 hours. CPT cannot be the only course remaining in the last semester of study. An 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.
To be eligible for internship all students must be in good academic standing. Please refer to your department's specific policies and procedures for CPT processing. Students cannot be an RA or TA when they are participating in an internship.

Internships cannot start before the semester or session students enroll in the CPT credit. For example, if you are interested in doing an internship in the summer semester, you cannot start working until the summer semester officially starts (1st day of classes). Exceptions are given to students who provide proper justification from the company supporting this request.

Internship end dates can be the last day of classes or continue until the day before classes start in the following semester (unless it is the student's final semester - contact your academic advisor). Refer to the Academic Calendar for semester start and end dates.

Required documents and forms for the internship proposal must be submitted to the respective AI MS concentration advising office two to four 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 internship credit to their class schedule after the drop/add deadline of each semester.

Below are the GPA requirements and restrictions for students to follow based on which semester they will be doing an internship in.

Summer semesters-

- Minimum GPA required: 3.0 (all GPAs must be at least 3.0)
- Full-time or part-time is allowed.
- In-state or out-of-state is allowed.

Fall and spring semesters-

- For GPAs between 3.0-3.24
    - In-state internships are allowed, out-of-state internships are NOT allowed.
    - Part-time is allowed, full-time is NOT allowed.
- For GPAs above 3.25
    - In-state and out-of-state is allowed.

    - Part-time and full-time is allowed.
- Regardless of GPA, any student doing an internship in the fall/spring semester must follow ISSC policies regarding campus presence and be registered for the proper courses per their iPOS.

The following policies apply to all students doing an internship regardless of the semester the internship occurs.

- Full-time CPT is 21 hours or more. Part-time CPT is 20 hours or less.
- For students doing CPT in their last semester, the end date of their internship is the conferral date if they are not a thesis student. If the student is completing their thesis defense while doing an internship, their internship end date must be their thesis defense date or earlier.

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. The AI MS Program expects students to honor an acceptance and immediately stop all employment seeking activities.

Never accept a job and turn it down if "something better" comes along. Not only is it inconsiderate and unprofessional, but it also reflects badly on Arizona State University and might negatively impact another ASU student's opportunities with that employer. Also, employers communicate with each other, and you don't want to get a bad reputation.

After you have given your decision, careful consideration and accepted an offer, stop looking. Inform other employers who have extended offers that you have accepted another position. Don't accept further interview invitations or search further. Please refer to NACE's "Playing Fair…Your Rights and Responsibilities as a Job Seeker" to become familiar with Principles for Professional Practice.

Students who accept an offer from an organization and later renege the offer will be prohibited from requesting future internship opportunities pending a meeting with the Assistant Director.

Required report

A two-page typed minimum final report is required before a grade and credit is given. The final report must be submitted to the internship supervisor for comments and then submitted for evaluation following the instructions on your concentration's CPT website.

Optional Practical Training (OPT)

Please visit the International Students and Scholars Center website for details regarding OPT and Pre-OPT. Students must be in good academic standing and have an approved iPOS. A student does (Pre-) OPT at their own risk since if the student doesn't graduate in the semester indicated on the iPOS, no letter will be issued by the advising office to support a later graduation date unless the delay is for reasons beyond the control of the student.

Program and University Procedures and Policies

Student Code of Conduct and Academic Integrity

The highest standards of academic integrity are expected of all graduate students, both in the academic coursework and in their 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 colleges as well as the university.

Violations of academic integrity include, but are not limited to: cheating, fabrication, tampering, plagiarism, or aiding and/or facilitating such activities. At the graduate level, it is expected that students are familiar with these issues and each student must take personal responsibility for their work. Also, 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 Student Life at https://provost.asu.edu/academic-integrity/policy.

Unless explicitly allowed by your instructor, the use of generative AI tools to complete any portion of a course assignment or exam will be considered academic dishonesty and a violation of the ASU Academic Integrity Policy. Students confirmed to be engaging in non-allowable use of generative AI will be sanctioned according to the academic integrity policy and FSE sanctioning guidelines.

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 a concentration-related journal. The effort should reflect a minimum of 750 hours of thoughtful work for a thesis. 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.

Satisfactory Progress, Academic Probation, Progress Probation, and Removal from the 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 who 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. All students are placed in one of three categories:

Satisfactory Progress

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 faculty advisor regarding his or her progress.

Academic Probation

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 iPOS courses
- Overall post-baccalaureate (cumulative) GPA below 3.0
- Overall graduate (500 level or above) GPA below 3.0

Progress Probation

Progress probation pertains to issues dealing with making progress toward a degree. The following are notices/letters you will receive if one of these pertains to your academics:

- Failure to complete core courses within the first year of study
- Failure to file the iPOS at the end of the first semester
- Failure to pass the culminating event that is required for the concentration: Thesis, Applied Project, or Portfolio
- Failure to make satisfactory progress towards completing the thesis, this includes maintaining regular contact with your thesis committee chair.

Removal from the Program

A student is recommended for removal from the program if he/she fails to meet the probationary standards placed upon him/her in the semester mentioned in the probationary letter. The student will receive a letter from the program explaining the reasons for the removal. The

student will have 5 calendar days from the date of the letter to appeal the decision. The Graduate Programs 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 requirements 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 Vice Dean of Academic Affairs to remove the student from the program. The Ira A. Fulton Schools Standards Committee reviews the student's case and makes the final ruling to the Associate Dean of Graduate College and the program. If the appeal is not granted in favor of the student, the Vice Dean of Academic and Student Affairs will recommend to Graduate College to remove the student from the program. Graduate College makes the final decision to dismiss the student from the program. Please refer to the Graduate College website for policies and procedures or contact the graduate advisor in your respective concentration advising center.

Continuous Enrollment

Once admitted to a graduate degree program or graduate certificate program, students must be registered for a minimum of one graduate-level 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 dissertations 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 research (592), thesis (599), or continuing registration (595), OR
- Be a graduate-level course.

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

Leave of Absence

Graduate students planning to discontinue registration for a semester or more must submit a Leave of Absence request via their Interactive Plan of Study (iPOS). Requests should have enough detail to understand the situation thoroughly and include a plan for continuing in a future semester. This request must be submitted and approved before the anticipated semester of non-registration. Students may request a maximum of two semesters of leave during their entire program. Having an approved Leave of Absence by the Graduate College will enable students to re-enter their program without reapplying 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 reapply for admission to resume their degree program; the application will be considered along with all other new applications to the degree program.

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

Maximum Credits in a Semester

Graduate students are considered full-time when enrolled in nine (9) credit hours per semester. Students holding RA or TA appointments through the Ira A. Fulton Schools of Engineering (FSE) are required to register for 12 credit hours each semester and must consult with their academic advisor each semester they hold an appointment to ensure proper registration.

Each shared program concentration has a defined maximum credit load per semester. These limits are based on academic expectations and workload capacity. After the first semester, students in good academic standing may request permission to enroll in additional credits beyond the standard maximum. Most programs limit their students to no more than 11 credits. If students wish to take more than 11 credits, they must submit an overload request.

To initiate an overload request, students must meet with their assigned academic advisor to review the implications of overload registration (e.g., academic probation policies, graduation timelines, and petition procedures). The petition will be reviewed by both the committee chair and the graduate program chair. Generally, requests to register for more than 15 credits will not be supported. Exceptions are rare and must be justified with strong academic rationale. Overrides are not guaranteed to be approved.

Maximum Time Limit

All work toward an MS degree must be completed within six consecutive years. The six years begin with the semester and year of admission to the program. Graduate courses taken prior to

admission that are included in the iPOS must have been completed within three years of the semester and year of admission to the program.

Concurrent Degrees

A student may pursue concurrent master's degrees with prior written approval from the head of the academic unit for each degree program and the Graduate College office. A separate online application is required for each degree program. A maximum of 20 percent of the minimum total semester hours for the completion of both degrees may be common hours shared between the Plans of Study. The total number of hours common to both degree programs may vary from this maximum value only when the Graduate College has formally approved coordinated degree programs.

Coursework common to both programs must constitute a well-planned and meaningful part of each of the programs and may only include coursework completed after admission to both degree programs. In all cases, the guidelines below must be followed:

1. The student must maintain continuous enrollment as previously defined. Registration in both programs may be required each semester, please see the academic unit for specific satisfactory academic progress and program rules. Requests to maintain continuous enrollment forms will apply to both programs; students may not be registered for coursework in either program if approved.
2. Graduate credit transferred from another institution may be applied toward only one degree program.
3. Culminating experiences (e.g. capstone courses, theses, applied projects) and comprehensive examinations cannot be shared between concurrent degree programs.
4. The six-year maximum time limit for completing degree requirements and graduation applies to each concurrent degree individually.

Refer to http://graduate.asu.edu/policies-procedures for the most recent Graduate College policies.

Pursuing two concurrent AI MS degrees is not allowed in any of the concentrations.

Financial Assistance Policies and Procedures

Financial Assistance and/or Fellowships

Students interested in funding should contact faculty members to inquire about their funded projects for potential hourly or assistantship positions. We also encourage our students to explore assistantships available outside of the program and the Fulton Schools of Engineering, as well as explore the Graduate College website.

Requirements for Research Assistants (RA) and Teaching Assistants (TA)

Students awarded an assistantship within the Ira A. Fulton Schools of Engineering are required to be registered for 12 credit hours (no more, no less). Audit credit hours do not count towards

the 12 credit hours. Students who obtain an assistantship outside the Ira A. Fulton Schools of Engineering are required to follow the policy of the unit that hires them.

TAs and RAs are treated as residents for tuition purposes. To be eligible for tuition remission, TAs, and RAs must be employed 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 or summer session of their employment. In addition, the university pays the individual's health insurance premium for those TAs and RAs working 20 hours per week (50 percent FTE). The student is responsible for fees other than tuition.

TAs are required to meet English language proficiency requirements set by the University. Those requirements can be found on the International Teaching Assistant website from Global Launch. Each department handles TA hiring differently. Students should reach out to the department that they would like to be hired by for more information on how to apply for a TA position.

Program and University Resources

Students are expected to become familiar with the university and the program policies and procedures and abide by the terms set forth. Information is available both online and by hardcopy upon request. Most importantly, you should visit the following websites:

- Graduate College (policies and procedures section)
- Schedule of Classes
- International Student and Scholars Center (if applicable)
- Ira A. Fulton Schools of Engineering

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 today! Please visit the Fulton Student Organizations website for a list of student organizations.

Inclusive Excellence, Fulton Values, and Land Use Statement

Arizona State University, The Ira A. Fulton Schools of Engineering (IAFSE), and all the schools within IAFSE upholds, values, and cherishes student and faculty diversity, no matter the circumstance. As members of the ASU community, we are charged with challenging injustices and social inequities of any kind through education. These values are an integral part of our standing as an institution and must be upheld by all members of the ASU community, including but not limited to all IAFSE staff, faculty, and students. ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural, and overall health of the communities it serves.

At IAFSE, we are a community committed to access, impact, and excellence. We cultivate excellence in teaching, research, and service. We deliver innovation that matters, focused on solving real-world challenges. We encourage bold thinking and empower our community to push boundaries. We foster learning and collaboration, knowing that diverse perspectives drive discovery. We build a foundation for all to be successful, ensuring everyone has the opportunity to thrive. Together, we engineer a better future—for Arizona, the nation, and the world.

IAFSE acknowledges the twenty-two Native Nations that have inhabited this land for centuries. Arizona State University's four campuses are located in the Salt River Valley on ancestral territories of Indigenous peoples, including the Akimel O'odham (Pima) and Pee Posh (Maricopa) Indian Communities, whose care and keeping of these lands allows us to be here today. IAFSE acknowledges the sovereignty of these nations and seeks to foster an environment of success and possibility for Native American students and patrons. We are advocates for the incorporation of Indigenous knowledge systems and research methodologies within computer engineering. IAFSE welcomes members of the Akimel O'odham and Pee Posh, and all Native nations to our program.

Title IX

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/.

Archived Editions of This Handbook

There are presently no archived editions of this handbook.