Graduate Student Handbook

for the following programs:

Master of Engineering

Master of Science Engineering/Engineering Science concentration in Software Engineering

Global Outreach and Extended Education
Ira A. Fulton Schools of Engineering
Arizona State University

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INTRODUCTION

Overview of Online Delivery
Students may obtain the MEng and MSE by taking all classes on the Internet. Classes given live on campus are digitized and streamed for viewing anywhere an Internet connection is available. The classes are the same as those taken by on-campus students. Normally a lecture is ready for viewing within a few hours after the live presentation. The Ira A. Fulton Schools of Engineering Global Outreach and Extended Education (GOEE) administers the distance program.

Areas of Study for Master of Engineering
The Master of Engineering degree program at Arizona State University (administered by the Office of Global Outreach and Extended Education, GOEE) offers opportunities for study beyond the bachelor’s degree in five areas of study: Embedded Systems, Engineering Management, Modeling & Simulation, Quality & Reliability Engineering, and Systems Engineering. These programs are designed for working professionals and delivered entirely online to meet the unique needs of professional engineers.

Master of Science in Engineering – Engineering Science-concentration Software Engineering
The Master of Science in Engineering in engineering science at Arizona State University (administered by the Office of Global Outreach and Extended Education, GOEE) offers opportunities for study beyond the bachelor’s degree in the concentration of Software Engineering. This program is designed for working professionals and delivered entirely online to meet the unique needs of professional engineers.

General Information
General information, including admission, residency, and degree requirements of the Graduate College is contained in the latest ASU Graduate Catalog. (The Catalog is available on the Web at http://catalog.asu.edu ) The Graduate College general requirements apply in their entirety to graduate programs in Master of Engineering and Master of Science in Engineering. This document contains additional and more specific requirements of the graduate programs administered by GOEE.

New Students
All new students will receive an email from the Global Outreach and Extended Education Office (cpd.hwexam@asu.edu) after a recommendation for admission has been made to the Graduate College. This email will include the assignment of a faculty advisor.

Sun Card
The Sun Card is the official photo ID of all Arizona State University students, faculty, and staff. Retailers in and around ASU campuses often offer discounts to Sun Card holders, and you also benefit from a 10% savings with Lifelock, a leader in identity theft protection.
To obtain your ID submit your ID photo and identification verification online, once you receive a photo approval email, you must complete the Sun Card Request Form. A $25 fee will be posted to your student account. Please allow 10 working days for delivery by the United States Postal Service.

**Student Responsibility**
It is the responsibility of each student to understand and observe all procedures and requirements specified by the Graduate College and the faculty in the engineering programs. The faculty and graduate advisor provide academic advice and assistance; however, the ultimate responsibility for meeting degree requirements remains with the student.

THE GRADUATE PROGRAMS WITHIN GLOBAL OUTREACH AND EXTENDED EDUCATION

**Administration**
The Office of Global Outreach and Extended Education administers the Master of Engineering and the Master of Science in Engineering – Engineering Science with concentration in Software Engineering, in accordance with policies of the Graduate College, the Ira A. Fulton Schools of Engineering, and the departmental faculty. In addition, the Academic Director serves as the focal point for graduate students and graduate programs within the department.

**Graduate Degree Programs**
The online engineering programs offer courses leading to the degrees of Master of Science (MS), Master of Science in Engineering (MSE), and Master of Engineering (MEng). The MEng is a graduate degree intended to meet the needs of Arizona’s practicing engineers and is designed primarily for Online students.

General requirements for these degrees are stated in the current [Graduate Catalog](#).

**Courses**
All graduate courses offered by the School are included in the current Graduate Catalog. Course requirements for degree programs and suggested programs of study are detailed in later sections. Sample programs for many of the areas of study are available on the specific programs web pages within GOEE’s website: [Engineering Degrees](#).

**Engineering Vision and Mission**
*Vision:* Leading Engineering Discovery and Innovative Education for Global Impact on Quality of Life.


THE MASTERS DEGREES

**Admissions**
A completed application includes (but is not limited to) the following:

1. Application ([http://graduate.asu.edu](http://graduate.asu.edu))
2. Application fee
3. Official transcripts from all universities attended
4. Statement of Purpose
5. Current Resume (optional, but highly recommended)

Admission applications are accepted for fall, spring and summer terms for these programs. **Incomplete Applications will not be considered.**

**Transcripts should be mailed to:**
Arizona State University
Graduate College Admissions
P.O. Box 871003
Tempe, AZ 85287-1003

**Non-degree students**
Non-degree students will not be allowed to register for online engineering courses without special permission. To enroll in graduate-level online courses as a non-degree student, the applicant must meet the requirements for regular admission to the graduate program.

**Faculty Advisor**
Before beginning coursework for a graduate program, admitted students will be assigned a faculty advisor within the discipline of their program. Faculty advisors are tenured professors and experts in their centralized area within Engineering. Faculty advisors can help students in their selection of elective courses, research topics, and approval of the program of study.

**Plan of Study**
Before completing the first nine credits of graduate course work, each student must submit a plan of study (iPOS), which must be approved by the student’s faculty advisor, the Academic Director and the Graduate College. The plan of study will list all courses that are to be completed as part of the student’s degree program as well as a schedule for completion of any undergraduate or graduate deficiencies. The plan of study may be amended as the student progresses through the program with the approval of the student’s faculty advisor and the Graduate Program Chair. The plan of study should be designed using the designated Course Plan Outlines listed below.

**Course Plan Outline**

Master of Engineering
Area of Study:

**Embedded Systems:**

**Core Courses:**
- CSE 566 Software Project, Process and Quality Management (business requirement)
- IEE 572 Design of Engineering Experiments (mathematics requirement)

**Elective Courses:**
- CSE 598 Software Analysis and Design
- CSE 522 Real-time Embedded Systems
- CSE 531 Distributed and Multiprocessor Operating Systems
- CSE 534 Advanced Computer Networks
- CSE 591 Advanced Hardware Systems Design
- CSE 565 Software Verification, Validation and Testing
- CSE 561 Modeling and Simulation
- CSE 598 System-level HW/SW Codesign
- CSE 598 Embedded Systems Programming
- CSE 591 Digital Logic Synthesis/Verification
- EEE 553 Coding and Cryptography (EEE 554 pre-req)
- EEE 591 Communication Networks

**Capstone:**
CSE 593 Applied Project

**Engineering Management:**

**Core Courses:**
Select three (3) of the following Industrial Engineering Methods Courses:
- IEE505 Information Systems Engineering
- IEE520 Statistical Learning for Data Mining
- IEE545 Simulating Stochastic Systems
- IEE572 Design of Experiments (math course meeting MEng requirements)^
- IEE574 Applied Deterministic Operations Research
- IEE575 Applied Stochastic Operations Research Models

Select four (4) of the following Engineering Management Core Courses:
- IEE512 Financial Engineering
- IEE530 Enterprise Modeling
- IEE541 Engineering Administration
- IEE552 Strategic Technology Management
- IEE454 Risk Management
- IEE556 Introduction to Systems Engineering
- IEE458 Project Management
- IEE571 Quality Management

**Elective Courses:**
Select two (2) electives from one area:

**Innovation and Entrepreneurship:**
- FSE501 Technology Entrepreneurship
- FSE502 Strategic Enterprise Innovation

**Software:**
- CSE563 Software Requirements and Specifications
- CSE566 Software Project, Process and Quality Management
- CSE565 Software Verification, Validation, and Testing

**Supply Chain:**
- IEE534 Supply Chain Modeling and Analysis
- IEE561 Production Systems^*

**Quality and Reliability:**
- IEE570 Advanced Quality Control**
- IEE573 Reliability Engineering^*
- IEE578 Regression Analysis
- IEE581 Six Sigma Methodology***

^Two of the three listed courses must be selected for pursuing the Lean Six Sigma Black Belt.
**required courses must be selected for students pursuing the Lean Six Sigma Black Belt.
***Two of the three courses must have been completed prior to enrolling into IEE 572, 578, and 570. The third course must be taken concurrently.

**Capstone:**
CSE 593 Applied Project
Select one (1) capstone experience:
• IEE593 Engineering Management Applied Project
  IEE585 Six Sigma Capstone Project (for students admitted into the concurrent LEAN SIX SIGMA BLACK BELT certificate)

**Modeling and Simulation:**

**Core Courses:**
- CSE 561: Modeling and Simulation Theory and Application
- CSE 598: Software Analysis and Design
- CSE 566: Software Project, Process and Quality Management **
- IEE 572: Design of Engineering Experiments***
- IEE 545: Simulating Stochastic Systems

**Elective Courses:**
(Select four (4) electives)
- CSE 522: Real-Time Embedded Systems
- CSE 565: Software Verification, Validation and Testing
- CSE 545: Software Security
- CSE 598: Distributed Software Development
- IEE 534: Supply Chain Modeling and Analysis
- IEE 561: Production Systems
- IEE 598: Network Models and Algorithms
- One graduate level course from any Ira A. Fulton Engineering School
- CSE/IEE 590: Independent Study (approved by faculty advisor)

**Capstone:**
- CSE 593/IEE 593 Applied Project

**Quality, Reliability, and Statistical Engineering:**

**Core Courses:**
- IEE 572 Design of Engineering Experiments
- IEE 578 Regression Analysis
- IEE 570 Advanced Quality Control
- IEE 573 Reliability Engineering
- IEE 571 Quality Management

**Elective Courses:**
(Select four (4) electives)
- IEE 520 Data Mining
- IEE 579 Time Series and Forecasting
- IEE 581 Six Sigma Methodology+**
- IEE 561 Production Systems
- IEE 582 Response Surfaces and Process Optimization
- IEE 512 Introduction to Financial Engineering
- IEE 552 Strategic Technological Planning
- IEE 545 Simulating Stochastic Systems
- IEE 574 Applied Deterministic Operations Research Models
- IEE 575 Applied Stochastic Operations Research Models
- IEE 534 Supply Chain Modeling and Analysis

+Two of the three courses must have been completed prior to enrolling into IEE 572, 578, and 570. The third course must be taken concurrently.

**required course must be selected for students pursuing the Lean Six Sigma Black Belt.

**Capstone:**
Select one (1) capstone experience:
• IEE593 Engineering Management Applied Project
  IEE585 Six Sigma Capstone Project (for students admitted into the concurrent LEAN SIX SIGMA BLACK BELT certificate)

**Systems Engineering:**

**Core Courses:**
Select seven (7) core courses:
• IEE 556 Introduction to Systems Engineering
• IEE 505 Information Systems Engineering
• IEE 512 Introduction to Financial Engineering
• IEE 530 Enterprise Modeling
• IEE 541 Engineering Administration
• IEE 545 Simulating Stochastic Systems
• IEE 552 Strategic Technologic Planning (management course meeting MEng requirements)
• IEE 572 Design of Experiments (math course meeting MEng requirements)
• IEE 574 Applied Deterministic Operations Research

**Elective Courses:**
Select two (2) electives from one area:
Software:
• CSE 563 Software Requirements and Specifications
• CSE 566 Software Project, Process and Quality Management
• CSE 561 Modeling and Simulation Theory and Application
• CSE 598 Software Analysis and Design
Hardware:
• EEE 581 Filtering of Stochastic Processes
• EEE 582 Linear System Theory
• EEE 585 Digital Control Systems
• EEE 586 Nonlinear Control Systems
• EEE 587 Optimal Control Systems

**Capstone:**
• IEE 593 Applied Project - Systems Engineering

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**Master of Science Engineering/Engineering Science**

**Concentration: Software Engineering**

**Core Courses:**
• CSE 543: Information Assurance and Security
• CSE 565: Software Verification and Validation
• CSE 566: Software Project, Process and Quality Management

**Concentration Course:**
• CSE 591: Software Engineering Principles and Concepts

**Elective Courses: 15-18 credit hours**
Select four (4) electives:
• CSE 564: Software Design
• CSE 563: Software Requirements
• CSE 522: Real-Time Embedded Systems
• CSE 598: Software Analysis and Design
• CSE 598: Distributed Software Development
• CSE 561: Modeling & Simulation Theory and Application
• CSE 598: Software Integration and Engineering
• CSE 598: Web Usability: Principles and Techniques
• FSE 501: Technology Entrepreneurship
• IEE 556: Introduction to Systems Engineering
• IEE 572: Design of Experiments
• IEE 598: Design for Six Sigma

Capstone:
All students admitted to the M.S.E. program in engineering science with a concentration in software engineering must complete a culminating experience. The culminating experience can be fulfilled with an applied portfolio. See Culminating Experience as listed below.

Culminating Experience

Master of Engineering

All students admitted to the Master of Engineering must complete an applied project to serve as the culminating experience for their graduate study. A grade of “B” or better is required in your Applied Project.

APPLIED PROJECT

Students will enroll in their corresponding Applied Project course for their program (CSE593 or IEE593) and work with a faculty member to complete a self-identified project (ex: research proposal, development project). Department override must be obtained before enrolling in this course. A grade of “B” or better is required in your Applied Project.

MSE ES - Software Engineering

All students admitted to the M.S.E. program in engineering science with a concentration in software engineering must complete an applied project or a portfolio to serve as the culminating experience for their graduate study.

APPLIED PROJECT

Students will enroll in CSE593: Applied Project and work with a faculty member to complete a self-identified project (ex: research proposal, development project). Department override must be obtained before enrolling in this course. A grade of “B” or better is required in your Applied Project.

PORTFOLIO

The portfolio entails a written summary of the student’s learning supported by one project from each of three engineering 500+ level courses in which a final grade of a B or better was earned in each course and final approval by the student’s faculty advisor and the graduate program academic director.
A written summary of your learning outcomes of your program of study in typewritten format approximately 1-2 pages. This reflection should include what you have learned with relation to the three supporting projects. The three referenced projects must be submitted with the Master’s Portfolio Submission Cover Sheet to the GOEE office. **Students should submit their portfolio prior to their last semester to allow sufficient time for review and approval.**

After approval by the faculty advisor and the graduate program academic director, the GOEE graduate advisor will notify the Graduate College of satisfactory completion of the Project Portfolio. Once the portfolio is approved and processed, students will see the culminating experience satisfied through MyASU – iPOS tab.

**SCHOLARSHIP AND POLICIES**

**Grades**

Academic excellence is expected of graduate students. To be eligible for a graduate degree, a student must achieve a cumulative grade point average of 3.0 or better in all work taken for graduate credit, exclusive of deficiencies, and in all work specifically included on the program of study. The required grade point average for master’s students is 3.0.

The three different grade point averages that are considered by the Graduate College are (1) the grade point average in all courses numbered 500 or higher that appear on the transcript, except those that were listed as deficiencies in the original letter of admission, and (2) the grade point average in all coursework that appears on the approved program of study, and (3) the grade point average in all coursework taken at ASU post baccalaureate.

A student who is not progressing satisfactorily toward a degree may be withdrawn from the program by the Dean of the Graduate College upon recommendation by the Director of the School. The policy of the Ira A. Fulton Schools of Engineering for academic probation and dismissal of graduate students follows.

**Ira A. Fulton Schools of Engineering (Engineering) Academic Standards**

**Policy for Maintaining Academic Satisfactory Progress**

A student who has been admitted to a graduate degree program in Engineering, either on a regular or provisional admission status, must maintain a 3.0 or higher grade point average (GPA) in:

1. All work taken for graduate credit (courses numbered 500 or higher),
2. The coursework in the student’s approved plan of study, and
3. All course work taken at ASU (overall GPA) post baccalaureate.
A student will be placed on academic probation if one or more of the student's GPAs listed above falls below 3.0. Students will be notified by mail when placed on academic probation.

A student will earn academic good standing by obtaining a 3.0 or better in the GPAs listed above by the time the next nine hours are completed. Coursework such as research and dissertation registration that are for Z or Y grade cannot be included in these nine hours.

A student may be recommended for dismissal from a graduate program if the student fails to increase all of the GPAs listed above to 3.0 or better by the time he/she completes at least nine credit hours as defined in section B. A student may appeal actions concerning dismissal by petitioning the School in which they are enrolled.

Academic units in Engineering can expand this policy statement to include additional policy governing the satisfactory academic progress of the students in their graduate programs. Added academic unit policy: none.

A student who has not completed nine credit hours while on probation may be recommended for dismissal from a graduate program if the student fails to increase all of the GPAs listed above to 3.0 or better by the time he/she completes two semesters on academic probation.

**Continuous Enrollment and Leave of Absence Policies**

Once admitted to a graduate degree program, students must be registered for a minimum of one credit hour (not audit) during each fall and spring semester of their graduate education. This credit must appear on the Plan of Study or must be an appropriate graduate-level course (e.g. 595, Continuing Registration). Courses with grades of “W” and “X” are not considered valid registration for continuous enrollment purposes.

Students planning to discontinue enrollment for a semester or more must request approval for a leave of absence through the iPOS petition. Students may petition the Graduate College for a leave of absence for a maximum of two semesters during their entire program. A petition for a leave of absence, endorsed by the student’s faculty advisor and the Academic Director, must be approved by the Graduate College. This request must be submitted and approved before the anticipated absence.

An approved leave of absence will enable students to re-enter their program without reapplying to the university. Students who do not enroll for a fall or spring semester without an approved leave of absence by the Graduate College are considered withdrawn from the university under the assumption that they have decided to discontinue their program. A student 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.

A student on leave is not required to pay fees, but in turn is not permitted to place any demands on university faculty or use any university resources

**Maximum Time Limit**

All work toward the MEng/MSE-ES degrees must be completed within six consecutive years. The six years begins with the semester and year of admission to the program. Graduate courses
taken prior to admission that are included on the Plan of Study must have been completed within three years of the semester and year of admission to the program.

**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 in 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 at [http://students.asu.edu/srr/code](http://students.asu.edu/srr/code).

**Academic Calendar**
Students are responsible for meeting all deadlines set within the ASU Academic Calendar. The calendar can be found at: [http://students.asu.edu/academic-calendar](http://students.asu.edu/academic-calendar).

**Satisfactory Progress and Academic Probation**
After each semester, the academic unit reviews students’ files for satisfactory progress towards completion of the degree. All students are placed on one of the four categories:

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.
   - Received a "D" or "E" in a required deficiency course or in a course at the 400 level or above.
   - Deficiency GPA 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.

4. A student is recommended for **withdrawal from the 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 Global Outreach and Extended Education explaining the reasons for the withdrawal. The student will have 7 calendar days from the date of the
letter to appeal the decision. The Graduate Affairs Committee (GAC) will review the case and will make the necessary recommendation. The Graduate Program Chair, on behalf of the GAC, 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 GAC recommends that the appeal is not granted in favor of the student, the Graduate Program Chair, on behalf of the GAC, will recommend to the Dean’s Academic Affairs to withdraw the student from the graduate 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 Academic Unit. 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 graduate program. Please refer to the Graduate College catalog on policies and procedures or contact the graduate advisor within Global Outreach and Extended Education.

**Graduate College Policies**

All students are responsible for the material within this Graduate Handbook and the Graduate College Policies Handbook found at [http://graduate.asu.edu/faculty_staff/policies](http://graduate.asu.edu/faculty_staff/policies)

**FINANCIAL**

**Program Tuition**

Students will pay online engineering program tuition in addition to their tuition based on admission (i.e. online, non-degree, resident, non-resident). Currently, the program tuition is $402 per credit hour. This fee is not regularly covered by the tuition waivers. For information about qualifying for financial aid, please see Student Financial Assistance Office at [http://students.asu.edu/costs-finances](http://students.asu.edu/costs-finances).

**Academic Calendar**

Students are responsible for meeting all deadlines set within the ASU Academic Calendar. The calendar can be found at: [http://students.asu.edu/academic-calendar](http://students.asu.edu/academic-calendar).

**CONTACT INFORMATION**

**Homework and Exams**

[cpd.hwexam@asu.edu](mailto:cpd.hwexam@asu.edu) or 480.965.1740

**General Program Questions**

[asu.cpd@asu.edu](mailto:asu.cpd@asu.edu) or 480.965.1740

**Online Student Services**

Angela Harguess

Email: [student-fseonline@asu.edu](mailto:student-fseonline@asu.edu) or 480.965.1878