

SIE 251: Introduction to Industrial Engineering, Fall 2026

Syllabus

Course Instructor

Instructor: Dr. Fabio Curti, Department of Systems and Industrial Engineering (SIE)
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Office Hours: by Appointment

Course Meetings

08/24/2026 – 09/12/2025 Mon-Wed-Fri, 11:00-11:50 am, Engineering Bldg, Room 301. The lectures will be video-recorded and posted on d2l.arizona.edu.

Course Objectives and Expected Learning Outcomes

This course provides an overview of the core areas of Industrial Engineering (IE), including design and manufacturing, operations research, engineering economic analysis, production systems and logistics, and engineering management. Students will explore how industrial engineers address complex challenges across manufacturing and service industries through real-world examples, problem-solving exercises, and systems-thinking case studies.

As an entry point into the IE program at the University of Arizona, the course highlights how subsequent classes build upon these foundations to prepare students for specialization in various domains of the field. By connecting concepts across technical, economic, and human-centered perspectives, students will gain an understanding of how the IE curriculum supports both academic and career development. By the end of the course, students will be able to:

1. Explain how IE principles improve efficiency in systems, organizations, and processes.
2. Recognize the interdisciplinary nature of Industrial Engineering (IE) by integrating technical and economic sciences.
3. Appreciate the domain-agnostic flexibility of IE and how it creates diverse career opportunities.

This course integrates lectures, interactive discussions, and collaborative group activities to promote active student engagement. Emphasis will be placed on real-world examples and problem-solving exercises to make the material both practical and relevant. Students will have opportunities

to work individually and in teams to apply core Industrial Engineering concepts, with particular attention to systems thinking, probabilistic reasoning, and optimization.

Course Breakdown

Week(s)	Topics	Assignments
1-2	Work Design and Measurement: work analysis, time and motion studies, productivity metrics	Assignment 1 Due at the end of week 3
3-4	Principles of Operations Research and Analysis for Industrial Engineering	Assignment 2 Due at the end of week 5
5-6	Manufacturing, Production and Service Systems: production types, Lean, Just-In-Time, service systems	Assignment 3 Due at the end of week 7
6-7	Engineering Economics and Cost Analysis. Quality Engineering and Reliability: SPC, Six Sigma, reliability principles	
7-8	AI for Industrial Engineering: search algorithms, intelligent agents, machine learning.	
9	Midterm Exam & Review Covers weeks 1–8	
10-11	Supply Chain and Logistics: Inventory control, supply chain structure, distribution systems.	Assignment 4 Due at the end of week 12
12-13	Decision Making and Risk Analysis; System life cycle.	Assignment 5 Due at the end of week 14
14-16	Final Project: Case study or applied project in Industrial Engineering	

Reading Materials

Lecture notes are provided and can be downloaded from the D2L course website.

Reference books:

1. "Introduction to Industrial Engineering" (free and online): <https://open.umn.edu/opentextbooks/textbooks/892>
2. The Industrial Engineering Handbook (free online through the library): https://arizona-primo.hosted.exlibrisgroup.com/permalink/f/1h28lag/TN_cdi_knovel_primary_book_kp_HIETOME3
3. Steven Nahmias, Tava Lennon Olsen "Production and Operations Analytics", Eighth Edition, Waveland Press, Inc., 2021

Grading Scale and Grade Policy

The grading scheme will follow the distribution below. University policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>.

Grade Points	Percentage	Letter Grade	Weight	
90-100	90%-100%	A	Assignments:	50%
80-89	80%-89%	B	Midterm exam:	25%
70-79	70%-79%	C	Final project:	25%
60-69	60%-69%	D		
<60	<60%	E		

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

Late Assignment and Final Project Submission Policy

Late assignments and final projects will incur a **deduction of 5 points for each day they are late**. Any assignment or final project submitted more than three days after the deadline will be considered not submitted and will receive a grade of **0 points**.

Midterm Examination Policy

The midterm examination evaluates students' understanding of the material covered during the first half of the course.

Schedule and Format:

- The examination date, time, venue, duration, and format will be announced at least two weeks in advance.
- The examination may include multiple-choice, short-answer, problem-solving, essay, or practical questions.
- The examination will be conducted over three days during the regularly scheduled class dates and times.

Only materials specifically authorized by the instructor may be used. Unless otherwise stated, books, notes, mobile phones, smartwatches, and laptops are prohibited.

The examination must be completed independently by each student. Cheating, plagiarism, impersonation, unauthorized collaboration, or sharing examination content is strictly forbidden. Suspected violations will be handled under the institution's academic-integrity procedures and may result in a zero grade or further disciplinary action.

Subject to Change Statement

The information contained in the course syllabus, may be subject to change, as deemed appropriate by the instructor, see <http://policy.arizona.edu/faculty-affairs-and-academics/course-syllabus-policy-undergraduate-template>.

Absence and Class Participation Policy

The UA's policy concerning Class Attendance and Participation is available at: <https://catalog.arizona.edu/policy/courses-credit/courses/class-attendance-participation>.

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/policies/attendance-policies-and-practices>

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or disability@arizona.edu. If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

Classroom Behavior Policy

Cell phones and other communication devices are to be turned off during class.

Threatening Behavior Policy

The University seeks to promote a safe environment where students and employees may participate in the educational process without compromising their health, safety, or welfare. The Arizona Board of Regents (ABOR) Student Code of Conduct, ABOR Policy 5-308, prohibits threats of physical harm to any member of the University community, including to oneself. Threatening behavior can harm and disrupt the University, its community, and its families.

Academic Integrity Policy

Integrity and ethical behavior are expected of every student in all academic work. This Academic Integrity principle stands for honesty in all class work, and ethical conduct in all labs and clinical assignments. This principle is furthered by the Student Code of Conduct and disciplinary procedures established by **ABOR Policies 5-308 through 5-404** (see chapter 5), all provisions of which apply to all University of Arizona students. This Code of Academic Integrity (hereinafter

"this Code") is intended to fulfill the requirement imposed by **ABOR Policy 5-403.A.4** and otherwise to supplement the Student Code of Conduct as permitted by **ABOR Policy 5-308.C.1**. Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work, exercises, homework, and exams must be the product of independent effort unless otherwise instructed. Students are expected to know and to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See:

- <http://catalog.arizona.edu/2011-12/policies/aaindex.htm>
- <https://deanofstudents.arizona.edu/policies/code-academic-integrity>

Any violation of the academic integrity code will be dealt with using the procedures detailed in the code.

Nondiscrimination and Anti-Harassment Policy

The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex (including pregnancy), national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. The University encourages anyone who believes they have been the subject of discrimination to report the matter immediately as described in the section below, "Reporting Discrimination, Harassment, or Retaliation." All members of the University community are responsible for participating in creating a campus environment free from all forms of prohibited discrimination and for cooperating with university officials who investigate allegations of policy violations.

Accessibility and Accommodations:

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu/>) to establish reasonable accommodations. If you qualify for special accommodations, please coordinate with the instructor to make sure we support all your accommodations. An exam taken in the DRC testing center is to be taken at the same time the exam is given in class.

Generative Artificial Intelligence Policy

The use of generative artificial intelligence (AI) tools (e.g., ChatGPT, Gemini, Claude, Copilot, or similar technologies) is **not permitted** on this course unless explicitly authorized by the instructor for a specific assignment or activity.

Unless otherwise stated, all submitted work must represent your own original effort. Using AI tools to generate, revise, paraphrase, summarize, translate, or otherwise assist with assignments, projects, quizzes, exams, or other course work without the instructor's explicit permission constitutes unauthorized assistance and may be considered a violation of the University's academic integrity policies.