

SIE 383
Integrated Manufacturing Systems
Spring 2025

Class hours: MW 3:00 – 4:15 p.m., AME S314

Instructor: Hannah Budinoff

Email: hdb@arizona.edu

Office Hours: Wed at 9:30-10:30am; on Zoom <https://arizona.zoom.us/j/88085900236>

Teaching Assistant: David Manford

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TA Office hours: Monday 2:00-2:50pm; ENGR 162

Prerequisite(s):

1. Advanced Standing

Text:

Readings will be assigned that are available online through the University of Arizona library. Refer to <https://new.library.arizona.edu/find/databases/connection-issues> for more information about connecting to resources through the library.

Expected learning outcomes:

1. Understand basic primary and secondary manufacturing processes.
2. Understand integration of part design and manufacturing.
3. Understand concepts and experience tools for manufacturing.

Topics to be covered:

1. Basic manufacturing definitions, functions, and systems
2. Part design specification including Dimensioning & Tolerance
3. CAD systems
4. Materials and their properties
5. Casting and forming (metals, powders, ceramics, plastics)
6. Material removal processes
7. Tooling and fixturing design
8. Rapid-prototyping
9. Numerical control
10. Robotics
11. Lean manufacturing concepts
12. Process planning
13. Design for manufacturability and assembly

Grading:

1. Quiz and Participation: 10%
2. Assignments: 20 %
3. Presentations: 15 %
4. Midterm Exam: 20 % (Date is TBD)
5. Design Project: 15%
6. Final Exam: 20 % (Tue. May 13th, 3:30 p.m. – 5:30 p.m.)

Computer Usage:

1. Solidworks
2. NC part programming
3. Robot programming

Laboratory Projects:

1. CAD (3D) part (SolidWorks)
2. Engineering drawings (SolidWorks)
3. Metrology
4. NC programming of mill (CNC)
5. Robot programming and motion control

Course Guidelines/Rules:

1. Lab assignments need to be done individually unless otherwise specified.
2. Students not attending a lab session or arranging in advance to make it up will receive a 0 for that assignment. If you miss a lab and receive permission in advance to make it up, the make up needs to be completed within 1 week of the original lab date.
3. Group assignments may be done in groups of up to 4 students. Each group should submit a single document with all names. No late work for group assignments is accepted.
4. Students are expected to attend lectures and attendance will be taken. You can miss up to three lectures during the semester without it impacting your grade. There is no makeup for missed participation or quizzes.
5. Late assignments will be subject to a 50% penalty and can only be submitted up to one week late. All students will receive one “free” late assignment without penalty. Plan on only using this free late assignment for when you really need it, due to illness or unexpected emergency.
6. Absences for any sincerely held religious belief, observance, or practice will be accommodated where reasonable, refer to the University Of Arizona policy at policy.arizona.edu/human-resources/religious-accommodation-policy.
7. Plagiarism is not allowed. Refer to the University Of Arizona policy at <https://deanofstudents.arizona.edu/policies/code-academic-integrity>.
8. Threatening behavior by students is not prohibited, refer to the University Of Arizona policy at <https://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.
9. It is the University’s goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.
10. The information contained in the syllabus (except the grade and absence policies) may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

11. If you have a legitimate reason that causes you to miss class on the day of an examination, you must contact the professor prior to the examination to make arrangements in advance. If you have an unexpected and extreme emergency, such as a serious illness or accident on the day of the exam, then you must contact the professor as soon as possible.
12. If you are sick or if you think you are sick don't come to class. Communicate with me as soon as possible.