

SIE 383
Integrated Manufacturing Systems
Spring 2017

Class hours: MW 3:00 – 4:15 p.m., ENGR 214

Instructor: Brian Cunningham

Email: bcunning@email.arizona.edu

Semester Office Hours: “Open Door” policy and by appointment

Rest of your life Office Hours... email me

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TA Office hours: M, W 10AM - Noon

TA Office: ENGR 162

Prerequisite(s):

1. Advanced Standing

Text:

Nanua Singh, *Systems Approach to Computer-Integrated Design and Manufacturing*, John Wiley & Sons, Inc., 1996.

Overall educational goals:

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

Lecture Notes: Lecture notes will be uploaded after class.

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. Lab Projects: 25 %
3. Presentations: 15 %
4. Midterm Exam: 25 % (Will be March 8th)
5. Final Exam: 25 % (May 9th, 3:30 p.m. – 5:30 p.m.)

Computer Usage:

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

Laboratory Projects:

1. CAD (3D) drawing
2. NC programming of mill
3. Robot programming and motion control
4. Rapid prototyping (3D printing)
5. Metrology

Course Guidelines/Rules:

1. Homework will be assigned but not collected or graded. We will go over the homework solutions in class only. They will not be uploaded to D2L.
2. Lab projects need to be done individually unless otherwise mentioned. Group labs may be done in groups of up to 4 students. Each group should submit a single report with all names. The same group must be used throughout the semester.
3. Students are expected to attend lectures and labs. Students not attending a lab session or arranging to make it up will receive a 0 for that assignment.
4. 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.
5. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion; Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.
6. Students are not allowed to use cell phones during class.
7. Plagiarism is not allowed. Refer to the University Of Arizona policy at <http://deanofstudents.arizona.edu/codeofacademicintegrity>).
8. Threatening behavior by students is prohibited (refer to the University Of Arizona policy at <http://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.