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

Instructor: Brian Cunningham
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Office hours: M, W 2:00-2:45 and “open door” policy
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Teaching Assistant: Dong Xu
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TA Office: ENGR 162G

Prerequisite(s):
1. Advanced Standing

Text:

Overall educational goals:
1. Understand basic primary and secondary manufacturing processes.
2. Understand integration of part design and 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. Class homework: 15 %
2. Lab Projects: 25 %
3. Presentations: 15 %
4. Midterm Exam: 20 % (TBA)
5. Final Exam: 25 % (May 7th, 3:30 p.m. – 5:30 p.m.)

Computer Usage:
1. Solidworks
2. NC part programming
3. CAD/CAM software (ESPRIT)

Laboratory Projects:
1. CAD (3D) drawing
2. NC programming of lathe or mill
3. CAD/CAM software (ESPRIT)
4. Robot programming and motion control
5. Rapid prototyping (3D printing)
6. Metrology

Course Rules:
1. Homework needs to be done individually unless otherwise mentioned.
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. 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.
5. Students are not allowed to use pagers and cell phones during the class.
6. Plagiarism is not allowed. Refer to the University Of Arizona policy at
http://deanofstudents.arizona.edu/codeofacademicintegrity).
7. Threatening behavior by students is prohibited (refer to the University Of Arizona policy at
8. Disabled students must register with Disability Resources and be identified to the course
instructor through the University’s online process in order to use reasonable accommodations.
9. 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.