

**SIE 383**  
**Integrated Manufacturing Systems**  
**Spring 2016**

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

**Instructor:** Brian Cunningham

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**Office hours:** M, W 2:00-2:45 and “open door” policy

**Office:** ENGR 264

**Teaching Assistant:** Hoyoung Na

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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. Lab Projects: 25 %
2. Presentations: 15 %
3. Midterm Exam: 30 % (Will be March 7<sup>th</sup> or March 9<sup>th</sup>)
4. Final Exam: 30 % (May 10<sup>th</sup>, 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 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. 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 cell phones during 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 (<http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>)).
8. 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.
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.