San José State University
Department of Mechanical Engineering
ME/ISE 110 Manufacturing Processes
Section 01, Fall 2014

Course and Contact Information

Class Days/Time: Mon/Wed 12:00 - 1:15 PM
Location: Engineering 341
Class Codes: 49499 (ME) or 49902 (ISE)
Credit Units: 3 units

Office Location: Engineering 310A
Telephone: 408-924-7167
Email: sang-joon.lee@sjsu.edu
Office Hours: Mon/Wed 1:30 PM - 2:30 PM and by appointment

Course Description http://info.sjsu.edu/web-dbgen/catalog/courses/ME110.html

Fundamentals of manufacturing processes such as machining, forming, casting, molding and welding. Surface treatments, powder-based processes, and microfabrication methods. Materials behavior and selection for manufacturing. Geometric dimensions and tolerancing. Prerequisite(s): ME 020 with a grade of "C-" or better. Pre/Corequisite: MATE 025.

Course Format and Communications

This is a mixed-mode class, with both in-person and online components. Online components require use of the Canvas learning management system, accessed via https://sjsu.instructure.com/. Successful completion of course requirements necessitates accessing the course website frequently, typically at least twice a week on a regular basis. Technical support for Canvas is available at http://www.sjsu.edu/at/ec/canvas/. Important communications regarding this class may be sent via Canvas or to email addresses listed in MySJSU, and thus each student is expected to maintain up-to-date contact information in both systems.

Course Learning Outcomes Upon successful completion of this course, the student should be able to:

1. Identify candidate materials and processes appropriate for given design requirements.
2. Make relative comparisons among a wide variety of engineering materials in terms of mechanical properties and workability.
3. Describe capabilities and limits for several manufacturing processes in terms of size, resolution, precision, surface quality, rate, and cost.
4. Communicate effectively across design, manufacturing, and inspection perspectives, specifically using geometric dimensioning & tolerancing (GD&T).
5. Propose sensible strategies for fabricating new engineering components that have no pre-existing standard production method.

Required Textbooks

Course Requirements and Assignments

It is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Participation Tasks: Throughout the semester there will be several online participation tasks tallied for credit with strict deadlines. Some tasks may be due in fewer than 48 hours from the time assigned (e.g. “Before our next class meeting...”), so it is important to be attentive to assigned tasks and to check Canvas regularly.

Reading Quizzes: Reading quizzes will be conducted online via Canvas. There are no make-up quizzes or individual time extensions, and missing a quiz will result in a score of zero. Reading quizzes will be drawn from content in the official course textbook. The immediately prior edition of the same textbook has almost identical content and should be sufficient (without guarantee, however) for most questions.

Case Study: The deliverable requirement is a concise, well-organized video based on one of two options: (1) how a commercial product is manufactured or (2) how a manufacturing process is used at a commercial site. The assignment is to be conducted in small teams of 2-3 persons. More specific conditions and requirements are defined in a separate document to be distributed in class.

University Policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Grading Policy

Graded work will be weighted as follows: 10% for Participation Tasks, 15% for Reading Quizzes, 20% for Case Study, 20% for Midterm Exam, and 35% for Final Exam. The overall course grade is calculated from a weighted sum of all graded components. Percentage points correspond to letter grade as follows:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.0-100</td>
<td>A+</td>
</tr>
<tr>
<td>93.0-96.9</td>
<td>A</td>
</tr>
<tr>
<td>90.0-92.9</td>
<td>A-</td>
</tr>
<tr>
<td>87.0-89.9</td>
<td>B+</td>
</tr>
<tr>
<td>83.0-86.9</td>
<td>B</td>
</tr>
<tr>
<td>80.0-82.9</td>
<td>B-</td>
</tr>
<tr>
<td>77.0-79.9</td>
<td>C+</td>
</tr>
<tr>
<td>73.0-76.9</td>
<td>C</td>
</tr>
<tr>
<td>70.0-72.9</td>
<td>C-</td>
</tr>
<tr>
<td>67.0-69.9</td>
<td>D+</td>
</tr>
<tr>
<td>63.0-66.9</td>
<td>D</td>
</tr>
<tr>
<td>60.0-62.9</td>
<td>D-</td>
</tr>
<tr>
<td>0-59.9</td>
<td>F</td>
</tr>
</tbody>
</table>

Any work that is first evaluated by letter grade uses the following percentage values for computation:

A = 100, A- = 91.5, B+ = 88.5, B = 85, B- = 81.5, C+ = 78.5, C = 75, C- = 71.5, D+ = 68.5, D = 65, D- = 61.5, F = 0

Exam Policy: All students are expected to complete exams in class as scheduled. There are no make-up exams, but for truly unavoidable and extenuating circumstances with firm documentation, a student may petition to have weight redistributed to the final exam. Disability accommodations must be coordinated through the Accessible Education Center http://www.sjsu.edu/aec/.

Exception Handling: Any grading appeals must be petitioned promptly in writing (email is acceptable). Late assignments will normally be recorded with zero credit, but may be documented and submitted promptly for consideration in context with all other exceptions class-wide. Exceptions will be evaluated at the very end of the semester. Special consideration of truly unavoidable and extenuating circumstances will depend on expeditious timing and strength of supporting documentation (e.g. doctor’s note, jury summons, military orders).

University Policy F13-1 at http://www.sjsu.edu/senate/docs/F13-1.pdf states that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.”
Preliminary Schedule  (Subject to change with fair notice via announcement in class or notification via Canvas.)

Aug 25 Mon: Introduction to Manufacturing [Chapter 1]
Aug 27 Wed: Material Properties and Behavior [Chapter 2]
Sep 01 Mon: Labor Day (no class meeting)
Sep 03 Wed: Material Properties and Behavior [Chapter 3]
Sep 08 Mon: Deformation Processes: Sheet Metal [Chapter 16]
Sep 10 Wed: Deformation Processes: Metalworking [Chapters 13, 14, 15]
Sep 15 Mon: Machining Processes [Chapter 23]
Sep 17 Wed: Machining Processes [Chapter 24]
Sep 22 Mon: Solidification Processes: Metal Casting [Chapter 11]
Sep 24 Wed: Solidification Processes: Polymers [Chapter 19]
Sep 29 Mon: Joining Processes [Chapters 30, 31]
Oct 01 Wed: Joining Processes [Chapter 32]
Oct 06 Mon: Surface Processes: Non-Mechanical Machining [Chapter 27]
Oct 08 Wed: Surface Processes: Finishing & Treatment [Chapters 26, 34]
Oct 13 Mon: Powder-Based Processes [Chapters 17, 18]
Oct 15 Wed: Additive Manufacturing [Chapter 20]
Oct 20 Mon: Microfabrication Processes [Chapter 28]
Oct 22 Wed: Microfabrication Processes [Chapter 28]; Case Study due
Oct 27 Mon: Catch-up and review
Oct 29 Wed: Midterm Exam
Nov 03 Mon: Measurement & Inspection
Nov 05 Wed: Features, Dimensioning & Tolerancing
Nov 10 Mon: Statistical Process Control [Chapter 36]
Nov 12 Wed: Statistical Process Control [Chapter 36]
Nov 17 Mon: Geometric Dimensioning & Tolerancing: Introductory Concepts
Nov 19 Wed: Geometric Dimensioning & Tolerancing: Datums
Nov 24 Mon: Geometric Dimensioning & Tolerancing: Tolerance Zones
Nov 26 Wed: Geometric Dimensioning & Tolerancing: Geometry Control Tools
Dec 01 Mon: Geometric Dimensioning & Tolerancing: Material Condition
Dec 03 Wed: Geometric Dimensioning & Tolerancing: “Built-In” Controls
Dec 08 Mon: Geometric Dimensioning & Tolerancing: Bonus Tolerance
Dec 10 Wed: Catch-up and review
Final Exam will be held on December 17 Wednesday, 9:45-12:00 AM, in regular classroom

University Calendar Reminders

Sep 01 Mon: Labor Day - campus closed
Sep 05 Fri: Last day to drop courses
Sep 12 Fri: Last day to add courses
Nov 11 Tue: Veteran’s Day - campus closed
Nov 27 Thu: Thanksgiving holiday - campus closed
Dec 10 Wed: Last day of instruction
University Policies

Dropping and Adding: Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Policies are detailed at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.


- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”

- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Academic Integrity: Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Campus Policy in Compliance with the American Disabilities Act: If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec to establish a record of their disability.

Accommodation to Students’ Religious Holidays: San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See University Policy S14-7 at http://www.sjsu.edu/senate/docs/S14-7.pdf for details.

Other Campus Resources for Student Success

Engineering Student Success Center http://engineering.sjsu.edu/students/success-center/
Student Academic Success Services (SASS) http://www.sjsu.edu/sass/
Academic Success Center http://www.sjsu.edu/at/asc/
Writing Center http://www.sjsu.edu/writingcenter/
SJSU Library http://library.sjsu.edu/