

## INFORMATION

**Course Number** ISE 232L

**Course Title** Manufacturing Processes

**Instructor** Professor Satish Bukkapatnam

- Office: GER 203
- Office Hours: 2-4 PM, Wednesday
- E-Mail: [Satish@usc.edu](mailto:Satish@usc.edu)

**Credits** 3

**Text Book** Mikell P. Groover, Fundamentals of Modern Manufacturing (current edition)

## COURSE EXECUTION

### Grading

- Midterm Exam ..... 25%
- Final Exam .....25%
- Lab and Plant Visits. .... 10%
- Homework .... 15%
- Quizzes .....15%
- Presentations and Participation.....10%

### Important Policies

- *Late homework/lab report submission*: 5% total grade will be automatically taken off every day after the deadline (please note that in any case a late submission is better than non-submission of an assignment)
- *Quizzes (in class)*: Please note that exact dates of the quizzes will not be announced *a priori*. The syllabus will only indicate the tentative dates that should help a student anticipate the readings necessary for a quiz. We will count the 4 best quizzes for final grade
- *Plant tours* may be conducted outside of regular class hours. For some reason you are not able to attend, you will be asked to submit an extra homework assigned by the professor
- *Presentations and participation*: Students may be asked to present on a particular topic, and, in general, regular attendance *plus* an active contribution to the learning environment will be counted positively towards your participation grade
- *Lab reports* are due exactly a week following the corresponding lab session. Most of the lab reports (as announced in class) will be graded by the writing lab for presentation quality. Students are expected to follow through with the instructions from the writing lab in improving the presentation, and must submit the revised version of the reports for comprehensive grading. Please note that the revised versions must be submitted within a week of their release from the instruction lab

**TA** Zhou Lisq

- Office Hours: To be announced
- Email: [XXX@usc.edu](mailto:XXX@usc.edu)

## **COURSE OBJECTIVES AND PLAN**

A successful engineer makes a positive contribution to the society by virtue of her/his high-caliber imagination skills, knowledge of the relevant technological domains and excellent communication skills. In this course you will learn fundamental skill sets to

- Imagine 3-dimensional artifacts
- Understand different basic technologies to create artifacts
- Learn tools and discipline to communicate ideas and technology

In order to meet these objectives, the course will cover

- Fundamentals of engineering drawing including concept of projections and their trigonometric derivations
- Basic manufacturing processes including casting, machining, forming with specific emphasis on metal part manufacturing
- Manufacturing technologies for polymers, ceramics and engineered materials
- Latest technological trends including those for semi-conductor manufacturing, rapid prototyping, micromanufacturing and on-line process control

Additionally, the course will also feature lab sessions to train students in communicating the results of their imaginations and experiments. We will use AutoCAD for drawing.

## **ACADEMIC INTEGRITY**

The Department of Industrial and Systems Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe the academic integrity standards described in SCampus, and to expect those standards to be enforced in this course.

## **DISABILITY ACCOMMODATION**

Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213)740-0776.

## SYLLABUS AND SCHEDULE

Week	Topic	Reading	Misc.
1	Introduction Engineering Drawing - Projections	Chap. 1 Lecture notes	
2	No Class Lab 1: Engineering drawing		
3	Engineering drawing: Projections, Developments Engineering Drawing	Lecture notes	
4	Engineering Drawing: Summary Lab 2: Engineering drawing		HW 1, Qz1
5	Casting Process Lab 3: Engineering Drawing	10.0-10.3	HW2
6	Casting Process Lab 4: Measurements and drawing	Chap. 11.5-7, Notes	Qz2 HW3
7	Riser design or Plant Tour Casting Video		Qz3
8	Machining Metal cutting Principles Tool life	Chp 22.1-2 Chap. 21, 23	HW 4
9	Machining and Metal Cutting Midterm 1	Notes	
10	Milling and Abrasive Machining Lab 5: Machining lab (video)	Chap. 22	HW 5
11	Plant Tour Abrasive machining	Chap. 25	
12	Abrasive machining and Summary Rolling, Forging, Extrusion, Drawing	Chap. 18,19	Qz4 Qz5
13	Polymer processing (video) No class: Thanksgiving Day	Chap. 13,14	HW6
14	Midterm 2 Electronic fabrication	Chap. 35	
15	Rapid prototyping On-line Quality Control, Course summery	Cha p. 34	Qz6