

IE 1052 – MANUFACTURING PROCESSES & ANALYSIS**Spring 2019****Catalog Description**

This is a 3 Credits undergraduate course in manufacturing processes and product development. At the beginning of the semester, student will learn the structure, physical property, mechanical behavior of Metal, Plastic, and Ceramic materials, and Tradition manufacturing process can be applied to those materials. In the middle of the semester, content will cover detail manufacturing and machining process, includes: casting, shaping, forming, cutting, turning, milling, broaching, joining, welding, surface treatment, sawing, filling. Students will also learn the fundamental principles of materials processes and manufacturing, including ongoing developments in modern manufacturing technologies such as micro/nano manufacturing, additive manufacturing. In addition, students will gain appreciation for the influence of manufacturing processes on product design and on the role of manufacturing on product realization.

Schedule

| IE 1052 Manufacturing Analysis & Processes (Enroll in one of the sections) | | | | 3 credits | |
|--|--------|--------------|----------|------------------------------|--|
| Section | Day(s) | Time | Location | Instructor(s) | |
| 01 | M | 1:50-4:25pm | 4 - 216 | Yijing Yin/Jiancheng Chen | |
| 04 | M | 6:30-9:05pm | 3 - 106 | | |
| 03 | TH | 1:50-4:25pm | 3 - 106 | | |
| 02 | F | 9:10-11:55am | 4 - 216 | | |

Lab, Engineering Training Center

Friday 1:00 – 5:00 am TBD

Instructors

Yijing Yin, Ph.D.

Office: 4-118

Office Hours: Monday, Thursday, Friday 1:00pm - 2:00pm

During office hours, you can come to office without appointment.

We are also available at other times; please email to schedule a time.

Email: yijing@scu.edu.cn

Teaching Assistants:

Ysabel Yin, QQ:1345531839

Tracy Yang, QQ 1149304107

Textbook

Manufacturing Engineering and Technology, 6th Ed.

Serope Kalpakjian and Steven R. Schmid:, Prentice Hall, ISBN – 13: 978-0-13-608169-2.

Materials Science and Engineering, 9th Edition, International Student Version

W.D. Callister, Jr. and D.G. Rethwisch, 9th edition, John Wiley and Sons, Inc. (2014).

Additional references and supplementary notes will be posted on the course website.

Course Objective:

This course treats manufacturing practices through three primary elements: i) Material properties and their role in manufacturing schemes ii) Fundamental manufacturing processes and their analysis iii) Systemic conceptualization of manufacturing practice and its role in product development We will cover the various subjects in manufacturing through guided learning and discussion, homework, exams, and laboratory. The latter involves group participation in lab experiments, field trips, process demonstrations and a term case study. Your case study will be an engineering description and cost analysis of a product from its functional intent to design details to material and process selection to use and maintenance to end-of-life considerations.

Laboratories

Lab safety: 'Safety First'. Please read the Safety Policy and abide by the safety rules for your sake. If not, you may not be allowed into the lab.

Lab sections are Friday Afternoon (Even week) and will last 3~4 hours.

Lab attendance: Absolutely mandatory. You must arrive on time.

Grading Policy

Your grade will be based on your overall performance in class, labs, group meetings, and quizzes. They count approximately as follows:

| ACTIVITIES | PERCENTAGES |
|-----------------------------------|-------------|
| Group project and Presentation | 10% |
| Lab Performance and Reports | 40% |
| 2 Quizzes | 40% |
| Group Design + Final Presentation | 10% |
| | |

Learning Outcomes

At the end of this course students should:

- Have acquired basic knowledge and understanding of materials processes and their roles in a holistic approach to product design;
- Be able to effectively discuss, write, and present issues related to manufacturing, materials, processes, and product development.
- Trace the development and life of a product from its design function through material and process selection to reuse, repurpose, or recycle.

Class Policies:

Regular class attendance is expected and encouraged. Each student is responsible for all of the material presented in class and in the reading assignments. Exams will emphasize treatment of material covered in lectures.

In general, no late assignments will be accepted or makeup exams given. Exceptions will be made for a valid excuse consistent with University Policy. If you cannot attend an exam or meet a due date, you must contact the instructor prior to the exam or due date. Arrangements will be made for students on a case by case basis. (Failure to contact the instructor prior to the exam or assignment due date will result in a zero on that exam/assignment.)

Honesty Policy: All students admitted to the SCUPI have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a SCUPI student and to be honest in all work submitted and exams taken in this course and all others.

ACADEMIC INTEGRITY

Students in this course will be expected to comply with the Sichuan University's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.