



San José State
UNIVERSITY

MATERIALS ENGINEERING 191

Section 1

Materials Processing Laboratory

Department of Chemical & Materials Engineering

Spring 2006 Greensheet

Class Meeting times: Tuesdays, 13:30 – 16:20; IS-119/120, Eng-105

Course Instructor: Dr. W. Richard Chung

Office Hours: Wednesdays, 1:00 - 4:00 and Thursdays, 1:00 – 3:00 p.m.; other times by appointment only.

Office Room: E-385E **Office Phone:** (408) 924-3927

E-mail address: wrchung@email.sjsu.edu

Please feel free to call or send me an e-mail message to set up an appointment for another time if you can't come to my regular office hours.

Course Information

Course Description Selected from the catalog

Lab experience in common processing methods for polymers and composite materials. Design and characterization of materials processing methods. (Lab 3 hours, 1.0 unit)

Prerequisites: MatE 25 or Tech 25

Textbooks:

Rodriguez, Ferdinand, Cohen, Claude, Ober, Christopher K., and Archer, Lynden A. (2003) Principles of Polymer Systems. Taylor and Francis: New York, New York.

Laboratory manual (can be purchased from the Associated Print Shop on campus or downloaded from the course website <http://www.engr.sjsu.edu/wrchung/courses.html#191>)

Course Primary Learning Objectives

This course is designed to help students understand fundamental knowledge of the processing techniques presently used in the polymer and composite industries. *Metals and ceramics processing techniques will not be covered in this course as they will be taught in different*

courses. Various types of polymeric materials, including most thermoplastics, thermosets, and elastomers, will be studied throughout the lab exercises. Technical currency with regard to general types of fiber-reinforced composite materials and fabrication techniques will be addressed. Relevant course assignments as well as hands-on laboratory activities will be conducted to enhance individual's cognitive and manipulative skills necessary for success in both educational and industrial facets of those fields of study. Upon completion of this course, the student will be able to:

1. Distinguish the main types of polymeric and composite materials used in industry and interpret the basics of polymer/composite technologies as they apply to some specific products
2. Demonstrate basic knowledge of the structure of polymers and composites and how their structures relate to their processing techniques and performance
3. Find reference resources for selection of the most appropriate processes to solve design and production problems related to materials usage
4. Apply the acquired knowledge and experience in the broad subject area of polymers in both the student's present technical area and in any future areas he or she may pursue
5. Make intelligent judgments relative to the most desirable role polymers and composites should play in modern social, ecological, and economic trends.
6. Provide sources of information for supplies and materials used in the polymer and composite industries
7. Test and characterize some processed product in order to understand structure and property relationship.

Useful References

1. Hall, Christopher (1994) Polymer Materials: An introduction for technologists and scientists. John Wiley: New York, New York.
2. Kalpakjian, Serope (1995). Manufacturing Engineering and Technology (3rd ed.) Addison-Wesley: Reading, Massachusetts.
3. Morena, John J. (1992). Advanced Composite Mold Making. Van Nostrand Reinhold: New York, New York.
4. Muccio, Edward A. (1994) Plastics Processing Technology. ASM International: Materials Park, Ohio.
5. Rosato, Donald V. et al. (1991). Designing with Plastics and Composites: A Handbook. Van Nostrand Reinhold: New York, New York.
6. Strong, A. Brent (1989) Fundamentals of Composites Manufacturing: Materials, Methods, and Applications. (1st Ed.) Society of Manufacturing Engineers: Dearborn, Michigan. ISBN: 0-87263-358-6

Grading Basis:

Lab reports	60%
Workmanship (product quality)	10%
Participation in lab	10%
<u>Quizzes</u>	<u>20%</u>
Total	100%

For all graded work, course letter grades will be assigned according to the corresponding ranges of cumulative averages listed below.

A+	96-100
A	94 – 96
A-	90 - 93
B+	87 - 89
B	84 – 86
B-	80 – 83
C+	77 - 79
C	76 – 74
C-	73 - 70
D	60 – 69
F	<60

Add/Drop Policy: Students wanting to enroll in the class must sign the roster and receive an enrollment code, provided space is available. Students may drop this class until Monday, February 14th without a “W” grade assigned.

Safety

- Safety glasses and regular shoes must be worn when working in the laboratory. Open-toe shoes and sandals are not permitted. Many chemicals, solvents, and catalysts can cause severe burns or irritation to your skin and eyes. For this reason, every effort should be made to avoid contact with them. If skin color changes or irritation occurs, seek medical help immediately. Report any accidents (including skin or eye irritations) and any unsafe conditions or behaviors immediately to the instructor.
- To prevent skin accidents, wearing a pair of gloves, an apron, a shop coat, or even an old shirt or jacket would be helpful. Dust masks must be worn at all times when working on sanding, fine polishing, or any machining of lab projects, which may produce any debris hazardous to your health. Respirators must be worn when dealing with chemical fumes such as epoxy, polyester, burn test, or sanding fiber-reinforced composites.
- Be aware of other students who near you - know who they are and what they are doing. Be careful at all times.
- Emergency evacuation procedures and policies will be conducted the first week of class. Any student who needs special assistance during an emergency evacuation should immediately report to the instructor. The use of medical aids and fire equipment will also be instructed the first week of class.

Lab Materials

Most materials required for the lab activities are already prepared for you in class. Once you have finished your lab assignments, you can take your products home.

Academic Dishonesty

Strict University policy on academic dishonesty will be enforced in this course. Students who violate the policy will receive an F on the specific test or assignment and be reported to the University after the incident. (Refer to Academic Integrity Policy S04-12 in SJSU Catalog for Academic Dishonesty Policy.)

Cheating means getting unauthorized help on an assignment, quiz, or examination. (1) You must not receive from any other student or give to any other student any information, answers, or help during an exam. (2) You must not use unauthorized sources for answers during an exam. You must not take notes or books to the exam when such aids are forbidden, and you must not refer to any book or notes while you are taking the exam unless the instructor indicates it is an "open book" exam. (3) You must not obtain exam questions illegally before an exam or tamper with an exam after it has been corrected.

Plagiarism means submitting work as your own that is someone else's. For example, copying material from a book or other source without acknowledging that the words or ideas are someone else's and not your own is plagiarism. If you copy an author's words exactly, treat the passage as a direct quotation and supply the appropriate citation. If you use someone else's ideas, even if you paraphrase the wording, appropriate credit should be given. You have committed plagiarism if you purchase a term paper or submit a paper as your own that you did not write.

For more information on the SJSU student code of conduct:

http://sa.sjsu.edu/judicial_affairs/students/index.html