

ME 336: Materials Processing
Unique Number 16210
Fall 1999

Instructor: Eric M. Taleff, ETC 8.180, 471-5378, taleff@mail.utexas.edu
<http://www.uhcs.utexas.edu/>

Texts: Schey, *Introduction to Manufacturing Processes*, second or third ed.

Lectures: ETC 2.132, MWF 10:00–11:00 AM

Prerequisites: EM 319, ME 334, ME 134L

Office Hours: Office hours for the instructor are as given below. Additional times are available by prior appointment.

Monday	Tuesday	Wednesday
8:00–9:00 AM	1:30–2:30 PM	1:30–2:30 PM

Grading Policy: Grading is conducted on an absolute scale, as given in the table below on the left. The weights used in calculating the course grade are given in the table below on the right.

Score	Grade
90–100	A
80–90	B
70–80	C
60–70	D
< 60	F

Item	Weight
Exam I	25%
Exam II	25%
Final Exam	30%
Class Participation	10%
Homework	10%

Important Dates: Please make note of the following important dates.

Sep. 10	—	Last day to add a course
Sep. 22	—	Last day to drop a course
Dec. 14	—	Final Exam , 9:00 AM–12:00 Noon

Homework: Homework is due at the *beginning* of class one week following its assignment. Any homework not turned in to the instructor by the beginning of class (10:00 AM sharp) is late. Late homework is not accepted and receives no credit! When academic conflicts arise, a written notice must be given to the instructor at least two weeks *in advance* in order to schedule an alternate due date for homework assignments. In case of personal emergencies, the instructor should be notified as soon as possible to discuss what arrangements are possible.

Class Participation: Attendance and participation in the class lectures are mandatory. Class participation includes attendance, answering questions in class, and completing short class assignments and quizzes. Example problems may sometimes be given for completion out of class, and will be due at the beginning of the following class. Students are expected to have read the assigned sections of the text before each lecture.

Regrades: Errors in the grading of homeworks, quizzes, and exams should be noted *in writing* and provided to the instructor along with the graded item for review no later than one week after the graded assignment is made available. Accurate and consistent grading is very important for proper student evaluation and fair conduct of the course; regrades will always be considered carefully. For these reasons *no regrades will be accepted without a written description* of the grading error, and regrades will only be conducted *in private* by the instructor.

Honesty: Any academic dishonesty will be dealt with according to University policy, including the stiffest penalty which the instructor may assess, usually a failing grade in the course. Cheating damages the reputation of the University and its students and will not be tolerated. The following statements are intended to clarify expectations which the instructor has of the students.

- Students are encouraged to discuss and work on homework and class assignments together, but all final work should be the student's own. Copying homework from another paper is considered cheating. Use of a homework solutions manual, or copies of such, is considered cheating. If you have a solutions manual, throw it into the trash immediately.
- Students are allowed to prepare and use one 8.5" × 11" piece of paper each during exams. The paper may be filled on both sides with anything that the student cares to write and should be handed in with the exam. The only other items allowed during exams are calculators, pencils, and rulers.

References: The following references are on reserve in the Engineering Library. It is your responsibility to become familiar with them.

1. *Metals Handbook: Welding, Brazing, and Soldering*, 9th ed., vol. 6 (ASM International, Metals Park, OH) 1983.
2. *Metals Handbook: Powder Metallurgy*, 9th ed., vol. 7 (ASM International, Metals Park, OH) 1984.
3. *Metals Handbook: Forming and Forging*, 9th ed., vol. 14 (ASM International, Metals Park, OH) 1988.
4. *Metals Handbook: Casting*, 9th ed., vol. 15 (ASM International, Metals Park, OH) 1988.
5. *Metals Handbook: Machining*, 9th ed., vol. 16 (ASM International, Metals Park, OH) 1989.

Evaluations: The course and instructor will be evaluated using the standard evaluation forms at the end of the course. Students are encouraged to provide continuous feedback on course effectiveness throughout the course.

The University of Texas at Austin provides, upon request, appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4241 TDD or the College of Engineering Director of Students with Disabilities at 471-4382.

Class Schedule and Reading Assignments

Dates	Topic	Reading in Edition	
		Second	Third
8/25	Introduction	2-1,2,3	4-1 to 4-11
8/27	Casting: Solidification and structures	3-1,2,3	6-1,2,3
8/30	Casting: Properties	3-4,5	6-4,7-1,2,3
9/1	Casting: Processes and design	3-7,8,9	7-4,5
9/3	Welding: Overview and methods	9-1,2,3	18-3 to 18-7
9/6	<i>Labor Day</i>		
9/8	Welding: Solid-state and liquid-state techniques		
9/10	Welding: Weldability and fluxes		
9/13	Welding: Structure of joints		
9/15	Welding: Design of joints		
9/17	Soldering/Brazing: Introduction, capillarity	9-4	18-8
9/20	Soldering/Brazing: Design and strength of joints		
9/22	Adhesive Bonding: Adhesives and joint design	9-7	18-9
9/24	Polymers: Overview and constitution	7-1,2,3	13-1,2,3,4
9/27	Exam I: Casting and joining processes		
9/29	Polymers: Strengthening mechanisms and rheology	7-4,5,6	13-5,6,7
10/1	Polymers: Processing	7-7	14-1 to 14-9
10/4	Polymer-Matrix Composites	7-10	15-1 to 15-4
10/6	Powder Processing: Overview	6-1	11-1 to 11-6
10/8	Powder Processing: Metals	6-2	
10/11	Powder Processing: Ceramics	6-3,5	12-1 to 12-5
10/13	Deformation Processing: Stress, strain, and plasticity	4-1,2	8-1 to 8-3
10/15	Deformation Processing: Indentation and piercing	4-3	9-1,2
10/18	Deformation Processing: Deformation principles and friction		
10/20	Deformation Processing: Upset forging	4-4	
10/22	Deformation Processing: Die forging and swaging		9-3,5
10/25	Deformation Processing: Rolling	4-8	9-7
10/27	Deformation Processing: Extrusion and drawing	4-5,6,7	9-4,6
10/29	Sheet Metal Forming: Shearing and bending	5-1,2,3	10-1 to 10-4
11/1	Sheet Metal Forming: Deep drawing and stretching (Guest Lecturer)	5-4,5	10-5 to 10-7
11/3	Machining: Orthogonal cutting geometry and forces	8-1 to 8-12	16-1 to 16-7
11/5	Exam II: Polymer, powder, and deformation processing		
11/8	Machining: Orthogonal cutting geometry and forces		
11/10	Machining: Materials, machinability		
11/12	Machining: Cutting fluids, the cutting tool, tool wear		
11/15	Machining: Single-point methods		
11/17	Machining: Multipoint methods		
11/19	Machining: Multipoint methods		
11/22	Machining: Abrasive, chemical, and electrical methods		17-1 to 17-6
11/24	Semiconductor Manufacturing: Semiconductor devices	10-1,2	20-1,2
11/26	<i>Thanksgiving</i>		
11/29	Semiconductor Manufacturing: Silicon technology	10-3	20-3
12/1	Semiconductor Manufacturing: Packaging	10-4,5	20-4,5
12/3	Final Exam Review		
12/14	Final Exam (9:00 AM–12:00 Noon)		