

SPRING 2007 COURSE SYLLABUS
ME 336: MATERIALS PROCESSING #17595

Instructor: Eric M. Taleff, Associate Professor, Department of Mechanical Engineering

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Lectures: MWF 11:00–11:50 AM in ETC 2.132

Office Hours: Tuesday: 2:00–3:00 PM
Wednesday: 2:00–4:00 PM

Required Textbook: John A. Schey. *Introduction to Manufacturing Processes*, Third Edition. (McGraw-Hill Higher Education: Boston, MA) 2000.

Course Description: Topics covered include casting, joining, forming, machining, effects of processing on materials properties, materials selection, and manufacturing process selection.

Prerequisites: Mechanical Engineering 311 and 111L and Engineering Mechanics 319, with a grade of at least C in each, and admission to an appropriate major sequence in engineering are required.

Corequisites: Students taking Mechanical Engineering 336 are required to be concurrently enrolled in the companion laboratory course, Mechanical Engineering 136L.

Grading Policy: Course grades will be calculated using scores on two in-class exams, a final exam and homeworks/quizzes/class participation, with weights given in the table below on the left. Letter grades will be assigned based on average course scores, as given in the table below on the right.

Item	Weight	Grade	Minimum Score
Exam I	30%	A	90
Exam II	30%	B	80
Final Exam	30%	C	70
HW/Quiz/Class	10%	D	60

Important Dates: Make note of the following important dates.

Wed., Jan. 31th — Twelfth class day.

Sat., May. 12th — **Final Exam**, 7:00 PM–10:00 PM in location assigned by U.T.

Homework: Homework is due at the *beginning* of class, typically one week following its assignment. Any homework not turned in to the instructor by the beginning of class (11:00 AM) 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 alternative due date for homework assignments. In case of personal emergencies, the instructor should be notified as soon as is convenient to discuss what arrangements can be made. Solutions to homeworks will be posted as described by the instructor during lecture.

Exams: All exams, except the final exam, will be conducted during normal lecture periods in the assigned classroom on dates specified by the instructor. The final exam will be conducted *only* at the time and location scheduled by the University. Students are allowed to prepare one 3" × 5" index card, with any notes desired on its front and back, for use during each exam. Each index card must be handed in with the exam for which it is used. Cards larger than the specified size will not be allowed. The only other items allowed for use during exams are calculators, pencils, pens and rulers.

Attendance: Attendance and participation in lecture are mandatory and will be considered in grading. Students are expected to keep up with the assigned reading and be prepared to answer questions on these readings during lecture. The instructor must be given written notice a minimum of two weeks in advance for any absences other than emergencies. Refer to the General Information Catalog, available on-line at

<http://www.utexas.edu/student/registrar/catalogs/>

for University policy on attendance. If absence is required because of an emergency, such as personal illness or severe illness of a family member, the instructor should be notified at the earliest convenient opportunity.

Regrades: Errors in grading should be noted *in writing* and provided to the instructor with the graded item for review *no later than one week* after the item is made available to the student. *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. Dishonesty damages the reputation of the University and its students and will not be tolerated.

Evaluations: The course and instructor will be evaluated using standard evaluation forms at the end of the course. Students are encouraged to provide continuous feedback to the instructor throughout the course. The most effective way to do this is by visiting the instructor during office hours.

Other Items of Importance:

- 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.
- Web-based, password-protected class sites are associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1.

Course Schedule and Assigned Reading

Week	Topics	Chapters
1: 1/17	Introduction, material properties	1-5
1/19	Materials selection methodology	1-5
2: 1/22	Metallurgy of casting	6
1/24	Metallurgy of casting	6
1/26	Industrial casting processes	7
3: 1/29	Industrial casting processes	7
1/31	Casting defects	6,7
2/2	Metallurgy of welds	18
4: 2/5	Metallurgy of welds and weld defects	18
2/7	Industrial welding processes	18
2/9	Brazing and soldering	18
5: 2/12	Brazing, soldering and adhesive bonding	18
2/14	Plasticity theory and friction	8, notes
2/16	Plasticity theory and friction	8, notes
6: 2/19	Forging	9
2/21	Rolling	9
2/23	<i>Exam I</i>	
7: 2/26 †	<i>X-Planes</i> Case study I	video
2/28 †	Extrusion, and drawing	9
3/2	Sheet metalworking	10
8: 3/5	Sheet metalworking	10
3/7	Orthogonal cutting operations	16
3/9	Orthogonal cutting operations	16
9: 3/12-16	<i>Spring Break</i>	
10: 3/19	Oblique and realistic cutting operations	16
3/21	Machinability, friction, and wear	16
3/23	Industrial machining processes	16
11: 3/26	Industrial machining processes	16
3/28	Non-traditional machining processes	17
3/30	<i>Exam II</i>	
12: 4/2	Mechanical behavior of polymers	13
4/4	Mechanical behavior of polymers	13
4/6	Polymer processing and manufacturing technologies	14
13: 4/9	Composite materials	15
4/11	Ceramics processing	12
4/13	Ceramics processing	12
14: 4/16	Powder metallurgy	11
4/18	Corrosion and environmental effects on materials	notes
4/20	Surface modification and coatings	19
15: 4/23	Surface modification and coatings	19
4/25	Microelectronics manufacturing	20
4/27	Microelectronics manufacturing	20
17: 4/30	<i>X-Planes</i> Case study II	video
5/2	Exam Review	
5/4	Course Instructor Survey	
18: 5/12	<i>Final Exam: Saturday, May 12th, 7:00-10:00 PM</i>	

† Guest Lecturer