

FUNDAMENTALS OF MANUFACTURING PROCESSES  
IT208-3 (Grayslake)  
SYLLABUS

**COURSE DESCRIPTION:** A survey of manufacturing operations including the use of plastics or polymers, material removal, casting, metal forming and welding. Related information is covered, such as powdered metallurgy, physical metallurgy, laser machining, metal capabilities, advantages, and disadvantages of these processes will be reviewed.

**TEXT:** Manufacturing Engineering & Technology,  
6th Edition, by Serope Kalpakjian & Steven Schmid (2010); Prentice-Hall, Inc.  
ISBN-10: 0136081681

**OBJECTIVES:**

1. To demonstrate the application and relative value of the manufacturing operations.
2. To show the relationship between material properties and physical metallurgy and forming methods used.
3. To introduce the student to the various manufacturing operations used in industry.

**EVALUATION:** Three exams and a report are required. Performance levels are based on the following:

Test I	100 points
Test II	100 points
Test III	50 points
Homework	50 points
Report	50 points
<b>TOTAL POINTS</b>	<b>350 points maximum</b>

**STANDARDS:** Letter grades are assigned based on the following end-of-term averages:

- A - 90%
- B - 80%
- C - 70%
- D - 60%
- F - Less than 60%

**INSTRUCTOR:** Lyle Gross  
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**GRADING POLICY:** Missed examinations have a 10% penalty unless an appropriate excuse is provided before the regularly scheduled examination. The missed examination must be completed within two weeks or the 10% penalty may be imposed. Reports turned in late will have a 10% penalty assessed.

**Assignments, Exams:** Following are reading assignments. You are trying to learn terminology and a basic understanding of how Manufacturing Processes work. Certain mathematical concepts will be introduced.

This course is divided into three blocks with a test at the end of each block. Your performance in this course would be enhanced if you study the material before you come to class on the weekend. If you have studied beforehand then you should have questions as we go through the material.

Review the Summary Section at the end of each chapter. If you have read the assignments and you attend class, you should be prepared to do well on the exams.

**CLASS SCHEDULE:**

Weekend 1: (October 3 & 4)

<b>Weekend One</b>		
GI	Introduction	Exam One Material
Chapters 1-6	Metals	
Chapters 20-25	Material Removal	
Homework handout		

Weekend 2: (October 17 & 18)

Exam #1, 100 points – Saturday morning

<b>Weekend Two</b>		
Chapters 7-9	Polymers, Ceramics, and Composites	Exam Two Material
Chapters 10-12	Casting	
Chapters 13-18	Forming and Shaping	
Homework handout		

Weekend 3: (Oct 31 & Nov 1)

Exam #2, 100 points – Saturday Morning

<b>Weekend Three</b>		
Chapters 27-30	Welding and Joining	Exam Three Material
Chapters 31-33	Surface Technology	
Chapter 35	Metrology and Instrumentation	

Report, 50 points – Sunday morning at the beginning of class

Exam #3, 50 points - Sunday afternoon at the end of class

**REPORT:**      Select a process, or type of process equipment.  
                          Make your selection and notify the instructor by the first Sunday class session.

Prepare a typewritten report that would answer the following questions:

- I.      What is the process or equipment?
- II.     How is it used? What is its purpose?
- III     How extensive is it used in industry?
- IV     Does it replace another machine or process? Is it an improvement over some other machine or process?

The written or narrative part of the report should be no more than (3) typed double-spaced pages. Conciseness of ideas is worth more than quantity of written material.

Inclusion of any brochures or pictures would be helpful and are not counted as part of the three (3) page maximum limitation.

A cover page should be used. This will not count as part of the three (3) page maximum limitation.

You could use trade journals, company advertising literature or an encyclopedia. Newsmagazines or newspapers sometimes carry articles in their business sections that discuss new technology applications or production techniques. The Internet is a good source for research. You may use the textbook for information. However, it cannot be the only source. We are trying to apply actual industry process information outside of the limits of the textbook. Attach a copy of articles and references cited or include a list of materials used. For long articles and publications, only the lead page is necessary.

Present your paper during an oral report presentation (maximum of 10 minutes) on the third weekend of class. Visual aids such as photos, drawings, or sample parts will enhance your presentation.

We will discuss the report at the first class meeting.

Instead of writing the report, you may plan a plant tour for the class. There will be time for a tour on Saturday morning or afternoon of the second weekend of class. The instructor's decision will be final in the selection of which plant to tour.

The written report is due the third weekend of class on Sunday morning.