

Chapter 11 Lesson Plan

Manufacturing Fundamentals

Chapter Resources		
Textbook Activity	Teacher CD	Online Learning Center
Create Composite Materials Create samples of composite materials and test their properties.	Lesson Plan Flash® Presentation <i>ExamView®</i> Chapter Test	Chapter Activities Chapter Quizzes

FOCUS

Chapter 11 explains the purpose and makeup of a manufacturing system via the systems model. A bit of the history of manufacturing and the various types of production systems is included. There is also a section relating why manufacturing is so important to society.

Objectives

- Explain the importance of manufacturing.
- Name the three basic types of production.
- Explain how companies compete in the global market.
- Discuss several manufacturing processes.
- Name some of the areas on which manufacturing has an impact.

Tying to Previous Knowledge

Have the class look around the room and pick out several items that were not manufactured. Point out how pervasive the system must be in order to supply virtually everything that is used or purchased.

TEACH

1. **Time line.** On a bulletin board, make a pictorial time line that shows the history of production systems. Begin with a picture of a primitive person making a simple product such as a stone axe. Next show a representation of a cottage industry, then an early factory, and, finally, an ultramodern factory with robots or CAM systems.
2. **Types of production.** As an alternate to the above (using a bulletin board), put up the titles of the three modern production systems (Custom, Intermittent, and Continuous). Under each title, put pictures of products produced by that system. Put the fewest pictures under Custom, more under Intermittent, and many under Continuous to represent the ratio of products produced by each type of system.

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Manufacturing Fundamentals (continued)

- 3. Compare and contrast.** Outline the steps needed to individually manufacture any selected product. Contrast that with the steps used to manufacture a similar item using mass production. Have a discussion as to which is preferable and for what reasons.
- 4. Observation.** Display a manufactured product to the class and inquire as to how it may have been manufactured. See if students can guess which raw materials were used, where they could be acquired, how they were processed, assembled, packed, and shipped.

ASSESS

Have students complete Chapter Test 11. Chapter tests are found in the *ExamView*® Assessment Suite on this Teacher Resource CD-ROM.

Reteach

1. Review the basic systems model with the students. Refer to the model frequently throughout this unit in order to help students understand how manufacturing operates as a system.
2. Topic for discussion: Will there always be jobs in manufacturing? Can technology eventually supplant all human intervention?

Enrich

1. This chapter provides an ideal opportunity to teach safe power tool operation to students. Assign a simple, quick, and inexpensive project that can be made individually by each student or mass produced by the class. In the process, each student will get the opportunity to acquire safe work habits and become familiar with your lab's power tools. Individual projects can represent custom production methods, while mass production work can provide students with the opportunity to learn about mass production manufacturing techniques.
2. There have been “anti-manufacturing” social movements, or resistance to modernization, through much of our modern history. Explore the reasons for these movements and how each protest began (and perhaps analyze why most were doomed to failure).

REFLECT

Challenge the class to imagine how people acquired items needed for daily survival before commercial manufacturing flowered in the “modern era” of the last 200 years or so.