

## Introduction to Manufacturing

**COURSE DESCRIPTION:** Think about the last time you visited your favorite store. Have you ever wondered how the products you buy make it to the store shelves? Whether it's video games, clothing, or sports equipment, the goods we purchase must go through a manufacturing process before they can be marketed and sold. In this course, you'll learn about the types of manufacturing systems and processes used to create the products we buy every day. You'll also be introduced to the various career opportunities in the manufacturing industry including those for engineers, technicians, and supervisors. As a culminating project, you'll plan your own manufacturing process for a new product or invention! If you thought manufacturing was little more than mundane assembly lines, this course will show you just how exciting and fruitful the industry can be.

### **COURSE OBJECTIVES:**

- Identify the disciplines within the field of manufacturing—including engineering, science, and technology—and understand how they work together to achieve a final goal.
- Identify manufacturing processes, such as input, output, and feedback.
- Distinguish between different types of manufacturing methods and processes.
- Discuss the steps in the risk management process.
- Discuss regulations and expectations in the workplace.
- Demonstrate communication techniques necessary to succeed in manufacturing.
- Define work ethic.
- Use time-management techniques.
- Explain how negotiation affects conflict resolution.
- Describe how teams function together, solve problems, and measure results.
- Identify team roles.
- Discuss theories of motivation.
- Identify the stages of team development.
- Discuss roles and tasks common in the manufacturing industry.
- Describe quality and how it is measured in manufacturing.
- Discuss how inventory is managed in the manufacturing industry.
- Evaluate different quality control applications in manufacturing.
- Define work systems design and human resource management.
- Analyze engineering concepts.
- Describe and produce engineering drawings.
- Compare and contrast lean manufacturing and lean engineering.

- Define manufacturing engineering and systems engineering.
- Discuss workers' rights.
- Evaluate hazards manufacturing employees face.
- Identify government regulations that protect workers in the manufacturing industry.
- Explain how to identify and dispose of hazardous material.
- Analyze the various specializations in manufacturing.
- Identify the education and training required for various careers in manufacturing.
- Report on a specific career in the manufacturing industry.
- Evaluate personal career goals.
- Discuss the stages of new product development.
- Examine how companies have new products manufactured.
- Describe effective marketing techniques.
- Participate in the operation of a manufacturing project.

**PREREQUISITES:** None

**COURSE LENGTH:** One Semester

**REQUIRED TEXT:** No required textbook for this course.

**MATERIALS LIST:** No required materials for this course.

**COURSE OUTLINE:**

**Unit One: Introduction to Manufacturing**

**Unit Two: Success in Manufacturing, Part 1: Soft Skills**

**Unit Three: Success in Manufacturing, Part 2: Teamwork**

**Unit Four: Success in Manufacturing, Part 3: Manufacturing Applications (Hard Skills)**

**Introduction to Manufacturing Midterm Exam**

**Unit Five: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills)**

**Unit Six: Safety in Manufacturing**

**Unit Seven: Careers in Manufacturing**

**Unit Eight: Culminating Manufacturing Project**

**Introduction to Manufacturing Final Exam**