

PRINCIPLES OF MANUFACTURING, SEMESTER B

Credits: 0.5

COURSE OVERVIEW AND GOALS

Principles of Manufacturing, Semester B, is a one-semester course intended to help you familiarize yourself with quality control systems, importance of maintenance and marketing, and identify key professional and personal skills that are helpful in having a successful career in the field of manufacturing. This course has sixteen lessons organized into four units. Each unit has a Unit Activity, and each lesson contains one or more Lesson Activities.

You will submit the Unit Activities to your teacher, and you will grade your work in the Lesson Activities by comparing them with given sample responses. The Unit Activities (submitted to the teacher), and the Lesson Activities (self-checked) are the major components of this course. There are other assessment components, namely the mastery test questions that feature along with the lesson; the pre- and post-test questions that come at the beginning and end of the unit, respectively; and an end-of-semester test. All of these tests are a combination of simple multiple-choice questions and technology enhanced (TE) questions.

By the end of this course, you will be able to do the following:

- ❖ Assess manufacturing processes, techniques, and regulations for best practices.
- ❖ Use statistical tools and mathematical calculations to improve manufacturing processes and possible outcomes.
- ❖ Compare marketing and manufacturing priorities.
- ❖ Predict how marketing and manufacturing departments can work more effectively together.
- ❖ Create a presentation about career opportunities in the manufacturing industry.
- ❖ Evaluate the importance of skills and characteristics for a successful career within the manufacturing industry.

COURSE COMPONENTS AND GRADING RUBRIC

The table gives a breakdown of the weight for each component in the course. Weight represents the percentage of the total score coming from each activity.

Course Components	Count	Weight*
Pretest. <i>A pretest is an optional assessment, typically designed for credit recovery. If a student shows mastery of a lesson objective, the student may be automatically exempted from the upcoming activities associated with the mastered objective. Pretests are not included as a component of the student's final grade.</i>	4	0%
Module. <i>Each module in this course contains an interactive tutorial or study and an associated mastery test. Tutorials and studies combine instruction and practice to prepare students for the mastery test, which is a computer-scored lesson-level summative assessment. The module score comes from a student's score on the mastery test.</i>	16	20%
Discussion. <i>A discussion activity is an opportunity for students to collaborate with their peers. An online threaded discussion mirrors the educational experience of a classroom discussion initiated when a teacher asks a complex, open-ended question. Students can engage in the discussion by responding both to the question and to the thoughts of others allowing for higher-order thinking about terminal objectives.</i>	4	20%
Unit Activity. <i>A Unit Activity is at the end of a unit and constitutes one or more small tasks. Its purpose is to deepen understanding of key unit concepts and tie them together. Each Unit Activity includes a simple rubric. The teacher versions include both a rubric and modeled sample answers. Unit Activities are teacher graded.</i>	4	20%
Posttest. <i>A posttest appears at the end of each unit.</i>	4	20%
End-of-Semester Test. <i>An end-of-semester test (EOS) appears at the end of each course.</i>	1	20%
Total	33	100%

Weight* Teachers may manually adjust these weights if desired, per district grading requirements.

SCOPE AND SEQUENCE

UNIT 1: QUALITY AND PROCESS CONTROL

In this unit, you'll explain the concept of statistical process control and describe various techniques. You'll also explain quality control and good manufacturing practices. In addition, you'll identify various manufacturing regulations and safety measures.

Activity	Activity Objective
Syllabus	Review the Course Syllabus at the beginning of the course.
Statistical Process Control	Explain the concept of statistical process control and identify various techniques.
Quality Control and Good Manufacturing Practices	Explain quality control and good manufacturing practices.
Manufacturing Regulations and Safety	Identify various manufacturing regulations and safety measures.
Unit Activity: Quality and Process Control	Use your knowledge of statistical tools to determine the mean and standard deviation of data and identify and create control charts.

UNIT 2: MAINTENANCE AND MARKETING

In this unit, you'll describe various maintenance procedures and safe material handling in a manufacturing unit. You'll also identify the conflicting areas between marketing and manufacturing and explain how to achieve integration between the both to meet customer demands. Then, you'll describe teamwork skills and identify leadership skills to successfully lead a team. Finally, you'll describe conflict-resolution skills, effective customer service skills, and explain how to reduce workplace stress.

Activity	Activity Objective
Maintenance	Identify various maintenance procedures and safe material handling in a manufacturing unit.

Activity	Activity Objective
Marketing-Manufacturing Interface	Identify aspects of a marketing-manufacturing collaboration and identify skills and career pathways in these areas.
Teamwork	Identify teamwork and leadership skills needed to successfully lead a team.
Conflict Resolution	Identify conflict-resolution skills by negotiating diplomatic solutions to avoid interpersonal and workplace issues.
Customer Service	Recognize customer service skills and best practices, describe internal and external customers, and identify strategies for improving customer satisfaction.
Unit Activity: Maintenance and Marketing	Identify skills needed for manufacturing careers and state why conflict might arise between marketing and manufacturing.

UNIT 3: MANUFACTURING BUSINESS AND EMPLOYMENT

In this unit, you'll describe various types of manufacturing companies and explain company formation and staff recruitment. You'll also describe career opportunities and identify various employability characteristics and additional skills required in the workplace. Then, you'll describe job acquisition and advancement skills.

Activity	Activity Objective
Forming a Manufacturing Company	Identify various types of manufacturing companies, including their formation and staff recruitment processes.

Activity	Activity Objective
Career Opportunities and Employability Characteristics	Identify career opportunities, various employability characteristics, and additional skills required in the workplace.
Job Acquisition and Advancement	Explain the process of applying for and securing a job in your desired industry, as well as best practices for career advancement.
Unit Activity: Manufacturing Business and Employment	Use mathematical calculations to analyze cost-effectiveness.

UNIT 4: PROFESSIONAL AND PERSONAL SKILLS

In this unit, you'll explain the importance of positive work ethics and describe good work habits. Then, you'll identify various aspects of personal integrity and describe laws and organizational policies that ensure safety at the workplace. In addition, you'll describe effective reading, writing, speaking, and listening skills. Finally, you'll explain the importance of diversity awareness and describe strategies to resolve workplace conflicts.

Activity	Activity Objective
Positive Work Ethics	Recognize the importance of positive work ethics and describe good work habits.
Integrity	Identify integrity attributes outlined by many workplace policies and laws.
Reading and Writing	Describe effective reading and writing skills by reading and interpreting workplace documents and writing clearly.
Speaking and Listening	Identify effective speaking and listening skills.

Activity	Activity Objective
Diversity Awareness	Recognize the role and importance of diversity.
Unit Activity: Professional and Personal Skills	Identify the process and steps taken when searching for a job, including different sources, job profiles, and required skills needed.

COURSE MAP

You will achieve course level objectives by completing each lesson's instruction, assignments, and assessments. For a detailed look at how the materials meet these objectives, review the [course map](#).