



monarch

2018 - 2019 Curriculum Catalog

Career and Technical Education Series

Introduction to Careers in Manufacturing

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Introduction to Careers in Manufacturing Course Overview

The Introduction to Careers in Manufacturing course provides the fundamentals of manufacturing in the United States and explores the jobs and career opportunities that manufacturing offers.

Unit 1 provides an overall view of manufacturing in the United States, including how it evolved, how manufacturers are organized, and the impact of manufacturing on our society and economy.

Unit 2 examines the elements of process design, management, and improvement through quality assurance plans, production and quality control, and performance measurement systems.

Unit 3 focuses on jobs and careers in manufacturing, including the need for skilled workers, the outlook for manufacturing in the U.S., and the competencies that manufacturers value and develop in their workers.

Unit 4 focuses on key elements in manufacturing systems and types of manufacturing processes. It also covers research and development, product design, process design and management, and lean manufacturing.

Unit 5 addresses two areas of concern for manufacturers: compliance and safety. It introduces the regulatory and safety environments in which manufacturers work and the steps they take to comply with regulations, as well as the steps some manufacturers take to go beyond compliance to create a high-performing workplace.

Objectives

- Evaluate the impact of manufacturing, including the Industrial Revolution and Second Industrial Revolution, on the U.S. society and economy.
- Describe the value of manufacturing to and its impact on American society and economy.
- Analyze possible careers available in manufacturing and its subsectors and in manufacturing operations.
- Interpret the trends in manufacturing technologies and how they will change the industry and our lives.
- List the benefits of standards in manufacturing processes and products.
- Identify the goals of quality assurance, including process redesign, management, and improvement.
- Estimate the diversity of and potential for growth in manufacturing career opportunities, including the need for skilled workers.
- Describe the personal effectiveness, academic, and workplace competencies, and evaluate their value to manufacturers.
- Summarize the manufacturing research and development process and the types of jobs needed to perform it.
- Characterize the role of product design in manufacturing, and list the steps in a typical product design process.
- Describe how manufacturers design, manage, and improve their processes.
- Compare the types of production systems and processes.
- Define manufacturing process, and identify the types of jobs such processes offer.
- Describe the benefits, key principles, and elements of lean manufacturing.
- Examine the purpose of regulations for manufacturers.
- List the main compliance areas for manufacturing.
- Evaluate the impact of regulations on manufacturing, on public health and safety, and on environmental protection.
- Summarize the most common safety hazards in manufacturing.
- Describe the key components of an effective workplace safety program.
- Characterize the attributes of a high-performing workplace.

Unit 1: Scope and Economic Effect of Manufacturing in the USA and Beyond		
Assignments		
Intro. to Careers in Manufacturing	1. Course Overview	10. Manufacturing Technologies
	2. The Evolution of Manufacturing	11. Project: The Impact of a New Technology
	3. How Manufacturers Are Organized	12. Manufacturing Operations
	4. Project: Learning About Your Interests	13. Quiz 2: The Structure of Manufacturing
	5. The Impact of Manufacturing	14. Special Project*
	6. Project: Emerging Technologies	15. Test
	7. Quiz 1: Manufacturing's Impact on the Economy	16. Course Project Part 1: Exploring a Career in Manufacturing*
	8. Manufacturing Industries	17. Glossary and Credits
	9. Project: Learning More about a Manufacturing Subsection	

Unit 2: Process Improvement in Manufacturing		
Assignments		
Intro. to Careers in Manufacturing	1. Quality Assurance	9. Project: Interpret Variation in a Process
	2. Manufacturing Process Improvement	10. Measuring Performance
	3. Project: Use PDSA to Problem Solve	11. Project: Compare Balanced Scorecards
	4. Manufacturing Process Redesign	12. Quiz 2: Production Quality, Planning, and Control
	5. Project: Redesign a Process	13. Special Project*
	6. Quiz 1: Process Management and Improvement	14. Test
	7. Production Planning and Inventory Control	15. Course Project Part 2: Explore Jobs and Careers*
	8. Production Control and Quality Control	16. Glossary and Credits

Unit 3: Careers in Manufacturing		
Assignments		
Intro. to Careers in Manufacturing	1. Careers in Manufacturing	8. Academic Competencies for Manufacturing
	2. Project: Find Job Openings at a Manufacturer	9. Project: Improve Your Academic Competencies
	3. The Outlook for Manufacturing Jobs	10. Workplace Competencies for Manufacturing
	4. Education for Careers in Manufacturing	11. Project: Explain a Business Fundamental
	5. Project: Evaluate Your Readiness for Manufacturing Jobs	12. Quiz 2: Competencies for Manufacturing
	6. Quiz 1: Jobs and Careers in Manufacturing	13. Special Project*
	7. Personal Effectiveness Competencies for Manufacturing	14. Test
		15. Course Project Part 3: Prepare a Learning Plan*
		16. Glossary and Credits

Unit 4: Advanced Manufacturing Processes		
Assignments		
Intro. to Careers in Manufacturing	1. Manufacturing Research and Development	9. Manufacturing Processes
	2. Project: Research and Development: Is It for You?	10. Lean Manufacturing
	3. Product Design	11. Project: A Case Study: Toyota's Lean Manufacturing Process
	4. Process Design and Management	12. Quiz 2: Manufacturing Systems and Processes
	5. Project: Developing an Understanding of Continuous Improvement	13. Special Project*
	6. Quiz 1: Product and Process Design	14. Test
	7. Manufacturing Systems	15. Course Project Part 4: Think Process*
	8. Project: The Baldrige Award	16. Glossary and Credits

Unit 5: Safety and Regulations in Manufacturing	
Intro. to Careers in Manufacturing	Assignments
	1. Manufacturing Regulations and Standards
	2. Compliance for Manufacturers
	3. Project: Research Manufacturing Compliance Jobs
	4. The Impact of Regulations on Manufacturing
	5. Project: Argue a Regulatory Issue
	6. Quiz 1: Manufacturing Regulations and Compliance
	7. Manufacturing Workplace Hazards
	8. Manufacturing Workplace Safety Programs
	9. Project: Study OSHA Violations
	10. Developing a High-Performing Workplace
	11. Project: Evaluate a Best U.S. Company
	12. Quiz 2: Safety in a High-Performing Workplace
	13. Special Project*
	14. Test
	15. Course Project Part 5: Determine Potential Hazards*
16. Glossary and Credits	

Unit 6: Course Project, Review, and Exam	
ICM	Assignments
	1. Course Project Part 6: Look to the Future*
	2. Review
	3. Exam

(*) Indicates alternative assignment