



ENLIGHTIUM ACADEMY

Ignitia™ Career and Technical Education
Electives

Introduction to Careers in Manufacturing

Enlightium Academy invites you to open the door to career and college readiness with Career and Technical Education (CTE) courses from Alpha Omega Publications - Ignitia™.

These rigorous, hands-on courses for grades 7-12 promote critical thinking, emphasize problem solving, and encourage students to take responsibility for their own learning. With 24 CTE courses divided into six clusters, these courses put students on practical paths to post-graduate success.

Should you have any questions about the curriculum, please contact support@enlightiumacademy.com or call Enlightium Academy Customer Support at (866) 488-4818 ext. 2017.

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Alpha Omega Publications Technical Support

Alpha Omega Publications' technical support is Ignitia™'s full-service technical support system. We exist to promote and preserve our customers' satisfaction. Our services include:

- Technical Support
- Product Configuration and Update Management

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Telephone:

Toll Free: 1-877-251-6662
Monday –Friday 7 a.m. to 5 p.m. (CT)

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.

INTRODUCTION TO CAREERS IN MANUFACTURING	UNIT 1: SCOPE AND ECONOMIC EFFECT OF MANUFACTURING IN THE USA AND BEYOND	
	Assignment Titles	
	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. Project: 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	

INTRODUCTION TO CAREERS IN	UNIT 2: PROCESS IMPROVEMENT IN MANUFACTURING	
	Assignment Titles	
	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. Project: 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

INTRODUCTION TO CAREERS IN	UNIT 3: CAREERS IN MANUFACTURING	
	Assignment Titles	
	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. Project: Special Project*
	7. Personal Effectiveness Competencies for Manufacturing	14. Test
		15. Course Project Part 3: Prepare a Learning Plan*
		16. Glossary and Credits

INTRODUCTION TO CAREERS IN	UNIT 4: ADVANCED MANUFACTURING PROCESSES	
	Assignment Titles	
	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. Project: 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

INTRODUCTION TO CAREERS IN	UNIT 5: SAFETY AND REGULATIONS IN MANUFACTURING	
	Assignment Titles	
	1. Manufacturing Regulations and Standards	9. Project: Study OSHA Violations
	2. Compliance for Manufacturers	10. Developing a High-Performing Workplace
	3. Project: Research Manufacturing Compliance Jobs	11. Project: Evaluate a Best U.S. Company
	4. The Impact of Regulations on Manufacturing	12. Quiz 2: Safety in a High-Performing Workplace
	5. Project: Argue a Regulatory Issue	13. Project: Special Project*
	6. Quiz 1: Manufacturing Regulations and Compliance	14. Test
	7. Manufacturing Workplace Hazards	15. Course Project Part 5: Determine Potential Hazards*
	8. Manufacturing Workplace Safety Programs	16. Glossary and Credits

UNIT 6: COURSE PROJECT, REVIEW, AND EXAM**Assignment Titles**

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| 1. | Course Project Part 6: Look to the Future* | 3. | Exam |
| 2. | Review | | |

(*) Indicates alternate assignment