



# ENLIGHTIUM ACADEMY

Ignitia™ Career and Technical Education  
Electives

Careers in Manufacturing Processes

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](mailto:support@enlightiumacademy.com) or call Enlightium Academy Customer Support at (866) 488-4818 ext. 2017.

If you have questions about technical support or product configuration, please see the information below for Alpha Omega Publications.

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- Product Configuration and Update Management

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Monday –Friday 7 a.m. to 5 p.m. (CT)

## COURSE OVERVIEW

Careers in Manufacturing Processes concerns the manufacturing process, from the conception of a new product through the prototype stage to fabrication, assembly, testing, and customer satisfaction. Manufacturing is the beating heart of American enterprise. Indeed, it is the heart of the economy of any advanced industrialized nation. This course examines every aspect of the manufacturing process from strategy and management to factory-floor tactics.

### Objectives

- Analyze means for achieving excellence in a manufacturing company.
- Develop skills to draw up a manufacturing plan and schedule.
- Chart the manufacturing skills needed to research and create products that address the needs of current and future customers.
- Apply market research, analytical skills, and financial understanding to the concepts of entrepreneurial endeavors in manufacturing.
- Analyze engineering, quality, and manufacturing responsibilities needed to build an excellent process and team approach.
- Recognize the need for accurate records and for making decisions based on data and facts.
- Analyze data, records, and budgets to determine optimal business and management strategies for the company.
- Develop interpersonal, communication, and critical thinking skills to work in teams and to use the skills of all team members.
- Chart the job and skill types that create manufacturing processes from conception to postpurchase.
- Instruct others on the basics of maintaining safe working environments.
- Analyze the cultures of high-performing companies, and differentiate among various kinds of continuous improvement and lean manufacturing strategies.
- Analyze fabrication, assembly, inspection, and testing as they combine in a value stream to produce a quality product meeting or even exceed customer expectations.
- Analyze the function and requirements of product service in the field and warranty work on products and how these two activities affect budgets and manpower.

| UNIT 1: INTRODUCTION TO MANUFACTURING AND CORPORATE CULTURE |   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
|---|---|--------------------|---|--|--|---|---------------------------------------|--|---|-----------------------------|-------------------------------|---|----------|--------------------------------------|--|--------------------------------|--------------------------|---|--|
| Assignment Titles   |   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| CAREERS IN MANUFACTURING PROCESSES                          | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">1. Course Overview</td> <td style="width: 50%;">10. Market Research and Core Competencies</td> </tr> <tr> <td>2. Introduction to Manufacturing and Corporate Culture</td> <td>11. Project: Preparing to Work with Your Dream Company</td> </tr> <tr> <td>3. The Economic Impact of Manufacturing</td> <td>12. Moving Forward into Preproduction</td> </tr> <tr> <td>4. Project: Learning about a Manufacturing Company</td> <td>13. Quiz 2: Customers and Manufacturing</td> </tr> <tr> <td>5. The Manufacturing Career</td> <td>14. Project: Special Project*</td> </tr> <tr> <td>6. Project: Looking at Work, Looking for Work</td> <td>15. Test</td> </tr> <tr> <td>7. Quiz 1: The Role of Manufacturing</td> <td>16. Course Project Part 1: Introduction of Your Product or the Improvement to a Product*</td> </tr> <tr> <td>8. Customers' Values and Needs</td> <td>17. Glossary and Credits</td> </tr> <tr> <td>9. Project: My Product to Improve the World</td> <td></td> </tr> </table> | 1. Course Overview | 10. Market Research and Core Competencies | 2. Introduction to Manufacturing and Corporate Culture | 11. Project: Preparing to Work with Your Dream Company | 3. The Economic Impact of Manufacturing | 12. Moving Forward into Preproduction | 4. Project: Learning about a Manufacturing Company | 13. Quiz 2: Customers and Manufacturing | 5. The Manufacturing Career | 14. Project: Special Project* | 6. Project: Looking at Work, Looking for Work | 15. Test | 7. Quiz 1: The Role of Manufacturing | 16. Course Project Part 1: Introduction of Your Product or the Improvement to a Product* | 8. Customers' Values and Needs | 17. Glossary and Credits | 9. Project: My Product to Improve the World |  |
| 1. Course Overview  | 10. Market Research and Core Competencies   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 2. Introduction to Manufacturing and Corporate Culture      | 11. Project: Preparing to Work with Your Dream Company  |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 3. The Economic Impact of Manufacturing                     | 12. Moving Forward into Preproduction   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 4. Project: Learning about a Manufacturing Company          | 13. Quiz 2: Customers and Manufacturing   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 5. The Manufacturing Career                                 | 14. Project: Special Project*   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 6. Project: Looking at Work, Looking for Work               | 15. Test  |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 7. Quiz 1: The Role of Manufacturing                        | 16. Course Project Part 1: Introduction of Your Product or the Improvement to a Product*  |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 8. Customers' Values and Needs                              | 17. Glossary and Credits  |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |
| 9. Project: My Product to Improve the World                 |   |                    |   |  |  |   |                                       |  |   |                             |                               |   |          |                                      |  |                                |                          |   |  |

| UNIT 2: PRODUCT DEVELOPMENT PHASE                                  |  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
|--|--|------------------------------------|---------------------------|--|---|--|--|---|-------------------------------|--|----------|---------------------------------|---|------------------------------------|--------------------------|---|--|--|--|
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| 1. The Product Development Process                                 | 10. Release to Production  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 2. Organizing a Product Development Team                           | 11. Project: Project Assessment for Overseeing Testing of a Bicycle Trailer  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 3. Project: Picking a Manufacturing Career                         | 12. Quiz 2: Prototypes and Preproduction Testing   |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 4. The Evaluation of Alternative Designs Using 3P                  | 13. Project: Special Project*  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 5. Project: What Do Others Think of an Idea?                       | 14. Test   |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 6. Quiz 1: Developing a Product                                    | 15. Course Project Part 2: Prototype Phase*  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 7. Building and Testing Prototypes                                 | 16. Glossary and Credits   |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 8. Prototype Flow from Procurement to Testing                      |  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |
| 9. Project: Prototype Project Manager for an Industrial Dishwasher |  |                                    |                           |  |   |  |  |   |                               |  |          |                                 |   |                                    |                          |   |  |  |  |

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| CAREERS IN MANUFACTURING PROCESSES | <b>UNIT 3: PRODUCTION I</b> |   |  |
|                                    | <b>Assignment Titles</b>    |   |  |
|                                    | 1.                          | Production Planning   | 9. Scheduling Material                       |
|                                    | 2.                          | Bill of Materials and Cost Collection                           | 10. Identifying Critical Parts and Materials |
|                                    | 3.                          | Project: Bill of Materials and Cost Collection for a Fundraiser | 11. Project: Researching Supply Chain Risk   |
|                                    | 4.                          | Lean Manufacturing  | 12. Quiz 2: Procurement                      |
|                                    | 5.                          | Project: A System of Profound Knowledge                         | 13. Project: Special Project*                |
|                                    | 6.                          | Quiz 1: Planning Production                                     | 14. Test                                     |
|                                    | 7.                          | Production Procurement  | 15. Course Project Part 3: Staffing*         |
|                                    | 8.                          | Project: Creating Documentation                                 | 16. Glossary and Credits                     |

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| CAREERS IN MANUFACTURING PROCESSES | <b>UNIT 4: PRODUCTION II</b> |  |  |
|                                    | <b>Assignment Titles</b>     |  |  |
|                                    | 1.                           | Core Competencies and Production                             | 9. Project: Ways OSHA Promotes Worker Safety         |
|                                    | 2.                           | Project: Investigate the Flexible Manufacturing System (FMS) | 10. Continuous Improvement                           |
|                                    | 3.                           | Manufacturing Processes, Safety, and Jobs                    | 11. Project: Baldrige Award Winners and How They Won |
|                                    | 4.                           | Core Competencies and Production                             | 12. Quiz 2: Assembling and Testing Products          |
|                                    | 5.                           | Project: Working with TIM WOOD                               | 13. Project: Special Project*                        |
|                                    | 6.                           | Quiz 1: The Manufacturing Process                            | 14. Test   |
|                                    | 7.                           | Assembly and Testing   | 15. Course Project Part 4: Production Phase*         |
|                                    | 8.                           | Quality and Safety   | 16. Glossary and Credits                             |

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| CAREERS IN MANUFACTURING PROCESSES | <b>UNIT 5: CUSTOMER SERVICE: BEFORE DELIVERY TO AFTER DELIVERY</b> |  |  |
|                                    | <b>Assignment Titles</b>   |  |  |
|                                    | 1.   | Customer Acceptance                          | 10. Customer Satisfaction and Delight                    |
|                                    | 2.   | Project: Career Choices                      | 11. Project: Customer Delight at a Car Accessories Store |
|                                    | 3.   | The Packing Process                          | 12. Quiz 2: After Delivery                               |
|                                    | 4.   | Project: Dunnage                             | 13. Project: Special Project*                            |
|                                    | 5.   | Shipping                                     | 14. Test   |
|                                    | 6.   | Quiz 1: Delivering the Product               | 15. Course Project Part 5: Delivery*                     |
|                                    | 7.   | Field Service                                | 16. Glossary and Credits                                 |
|                                    | 8.   | Project: Creating a Field Service Department |  |
| 9.                                 | Warranty Service   |  |  |

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| CAREERS IN MANUFACTURING PROCESSES | <b>UNIT 6: COURSE PROJECT, REVIEW, AND EXAM</b> |  |         |
|                                    | <b>Assignment Titles</b>                        |  |         |
|                                    | 1.  | Course Project Part 6: Corporate Responsibility* | 3. Exam |
|                                    | 2.  | Review   |         |

(\*) Indicates alternate assignment