

# Introduction to Advanced Manufacturing

## FOUNDATIONS



**4.4: Manufacturing in the Design Process**

**4.4.1: History**

Until relatively recently, companies were compartmentalized to a high degree. This means that each department worked independently of others. In terms of product design, the following would be a typical process:

- Marketing conducts market research. Passes product requirements to design department.
- Design department designs product. Passes product to production department.

**Product Design – Compartmentalized Approach**

Drag each label onto the correct room, according to the process flow shown.

Production  
Sales  
Marketing  
Customer Service  
Design

Submit

**Introduction to Advanced Manufacturing** includes everything you need for successful blended learning.

Through LearnMate™, essential resources are provided for both students and teachers.

- Students are always one click away from glossaries and help files available on each page.
- Teachers have instant access to handouts, tips and detailed activity instructions.

Introduction to Advanced Manufacturing is ideal for any engineering or automated manufacturing program, providing a thorough and engaging element of STEM (Science, Technology, Engineering and Mathematics) education.



**Introduction to Advanced Manufacturing** provides students an excellent overview of the field of advanced manufacturing. This 15-hour course engages students by means of hands-on activities and compelling online curriculum that includes:

- a comprehensive overview of the manufacturing field, processes and career choices.
- multi-level activities in career seeking and planning a manufacturing company.
- a capstone project that challenges students to follow all the steps of the manufacturing process to produce a product.

For students on a career track in mechatronics, automation and advanced manufacturing, Introduction to Advanced Manufacturing serves as an excellent launching pad for more in-depth courses.

Exploratory students with little exposure to the field may decide to pursue an advanced manufacturing career after learning of the many exciting opportunities available!

P O W E R E D B Y

**LearnMate™**

Foundations of Advanced Manufacturing courses are powered by **LearnMate™**- intelitek's innovative e-learning platform. Self-paced interactive LearnMate™ content may be deployed stand-alone or through the robust learning management system (LMS). The LearnMate™ e-learning suite provides everything needed for the ultimate blended learning experience.

- SCORM-compliant interactive content
- Anytime, anywhere accessibility
- Student and class management
- Grade tracking
- Skill/competency reporting mapped to national academic skill standards



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# Introduction to Advanced Manufacturing

## Materials Included

- Introduction to Advanced Manufacturing E-Learning Curriculum Order #14-3096

## Course Outline

1.0 (Core): Introduction	6.0 (Core): Manufacturing Processes
1.1: Definition of Manufacturing	6.1: Materials
1.2: The History of Manufacturing	6.2: Processes
1.3: Manufacturing and the Economy	6.3: Sheet Metal Processes
1.4: The Spectrum of Manufacturing	6.4: Other Metal Processes
1.5: Project Production	6.5: Plastic Processes
1.6: Job Shop Production	6.6: Chemical Processes
1.7: Mass Production	6.7: Textile Processes
1.8: Process Production	6.8: Food Processes
1.9: Process Selection	6.9: Packaging
2.0 (Core): Careers in Manufacturing	7.0 (Core): Computers in Manufacturing
2.1: The Changing Face of Manufacturing Employment	7.1: Information Technology as the New Heart of Manufacturing
2.2: Career Choice Considerations	7.2: Computers in the Design- Production Process
2.3: Common Manufacturing Jobs	7.3: CAD
2.4: Finding Career Information	7.4: CAE
2.5: Assembly Workers	7.5: CAM
2.6: Manual Machine Operators	7.6: CNC
2.7: CNC Machine Operators	7.7: Statistical Process Control
2.8: First - Line Supervisors	7.8: Computers in Manufacturing Company Management
2.9: Production Planners	7.9: Forecasting Software
2.10: Transportation Manager	7.10: Computer Simulation Modeling
2.11: Quality Control Technicians	7.11: Computers in Factory Control
2.12: Industrial Engineers	
2.13: Factory Managers	
3.0 (Activity): Seeking a Manufacturing Career	8.0 (Core): Automation in Manufacturing
3.1: Introduction	8.1: Introduction to Automation
3.2: Job Search	8.2: Advantages and Disadvantages of Automation
3.3: Resume Preparation	8.3: Components of Automation
3.4: Writing the Cover Letter	8.4: CNC Machines
3.5: Conclusion	8.5: Robots
4.0 (Core): The Manufacturing Company	8.6: Conveyors
4.1: Types of Manufacturing Companies	8.7: AGV's
4.2: Departments in a Manufacturing Company	8.8: AS/RS
4.3: Manufacturing as a Competitive Advantage	8.9: Machine Vision Systems
4.4: Manufacturing in the Design Process	8.10: PLCs
4.5: Manufacturing Integration Strategies	8.11: HMIs
5.0 (Activity): Planning and Staffing a Manufacturing Company	8.12: Motion Control
5.1: Introduction	8.13: Flexible Manufacturing Systems
5.2: Product Selection	8.14: Computer Integrated Manufacturing
5.3: Integration Strategy Selection	8.15: Implementing an Automated System
5.4: Process Model Selection	
5.5: Department Planning	9.0 (Project): The Arrow Plane
5.6: Staff Planning	9.1: Introduction
5.7: Conclusion	9.2: Materials & Assembly
	9.3: Quality Control
	9.4: Filling the Order
	9.5: Conclusion

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## FOUNDATIONS PROGRAM

**Introduction to Advanced Manufacturing** is part of the Foundations Program, which teaches the job-ready skills essential for career success.

Foundations courses focus on the critical skills for entrants to the

workforce including safety, applied math and employability.

The Foundation Program ensures students are workforce-ready: the foundation of success for tomorrow's skilled workforce!

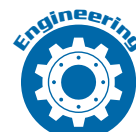


### Foundations Program courses include:

- Employability Skills
- Mathematics for Technicians 1 & 2
- Blueprint Reading
- Industrial Safety: Lockout/Tagout
- Hand Tools & Power Tools
- Mechanical Fasteners
- Lubrication for Technicians
- Mechanical Measurement and Quality Control
- Electronics and Sensors
- **and more!**

### Make Introduction to Advanced Manufacturing part of a comprehensive STEM program!

With Introduction to Advanced Manufacturing as the cornerstone, the Foundations Program courses are an excellent launching point for more in-depth mechatronics, automation and advanced manufacturing courses.



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