



FOUNDATIONS OF MANUFACTURING

Success in today's workforce requires more than just technical skills. Intelitek's series of manufacturing courses provide job-readiness skills to students who plan to enter industry for lifelong success.

The program is the ideal solution for middle school, high school and post-secondary institutions looking to provide job ready skills and life skills for essential careers in production and manufacturing. These courses enable any learner to acquire the core skills necessary for lifelong success in industry. In addition, the program focuses heavily on life skills like critical thinking, problem solving, teamwork, and leadership.

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Academic Representative:



Technology Education Concepts

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Intelitek Pedagogic Values

Vocational training today needs to prepare a student with skills that will ensure he can be relevant in the labor market until retirement in about 40 years.

This is not a simple challenge because it is impossible to predict what the labor market will look like in a few decades. How can educators predict what new professions will be required, what existing professions will disappear from the job market, and what changes will occur that will affect students careers? While this is a challenge, the answer is not complex. As educators we need to deliver skills that are transferable and more importantly, the skill to teach oneself new technology, techniques, processes and industries. In other words, in between teaching students their

short term career, we need also to teach them to adapt and self-educate so they can keep up with change.

As educators, we want to educate graduates who are able to adapt themselves to changes in the job market over the course of their careers. We need to inspire individuals that will be able to successfully cope with change, lead processes to adapt to change and thereby create increased value for society, employers and for themselves.

Together with industry employers, educators and students, Intelitek continues to develop education programs that equip students with the tools to be relevant in the market when they graduate and throughout their working careers.

Essential Career Skills for Tomorrow's Workforce

The foundation of manufacturing courseware is primarily virtual instruction delivered on-line accessible anywhere, anytime. Using online simulations, assessments, and skills based activities, students obtain validated skills essential to their careers.

In addition to technical skills, these introductory manufacturing programs addresses the industry requirement for entry level employees to have appropriate employability skills on day one. Courses include OSHA safety principles. include portions of the SkillsUSA Career Skills Education Program (CSEP), and offer learners essential job skills, like communications, personal and professional growth, and career focus that make for successful work experiences. Attention is devoted to subjects like computer ethics in the workforce, resume writing and interview skills, teamwork, problem solving, retirement planning and the likes.

Other courseware includes an introduction to advanced manufacturing, with an overview of the field and potential career paths. Skills needed for entry and advancement into the manufacturing workforce are part of the programs, including quality control, basic and applied math skills, blue print reading, hand and power tool principles and applications.

With these courses, learners are workforce-ready: with the foundation for success in the field of advanced manufacturing.

Pathway to Employability

The program is a bundle of courses in manufacturing skills that will enable a school to prepare students for industry with the core fundamental technology and work knowledge to prepare them for jobs in manufacturing and production.

The courseware is designed with both technical and soft skills for maximum student benefit. The program is designed for middle or high school students as well as for students in post-secondary schools preparing them for jobs.

Pathway to Certification

The program is a comprehensive set of relevant topics that include up to 16 courses and provides prep training and practice tests for production technician certification.

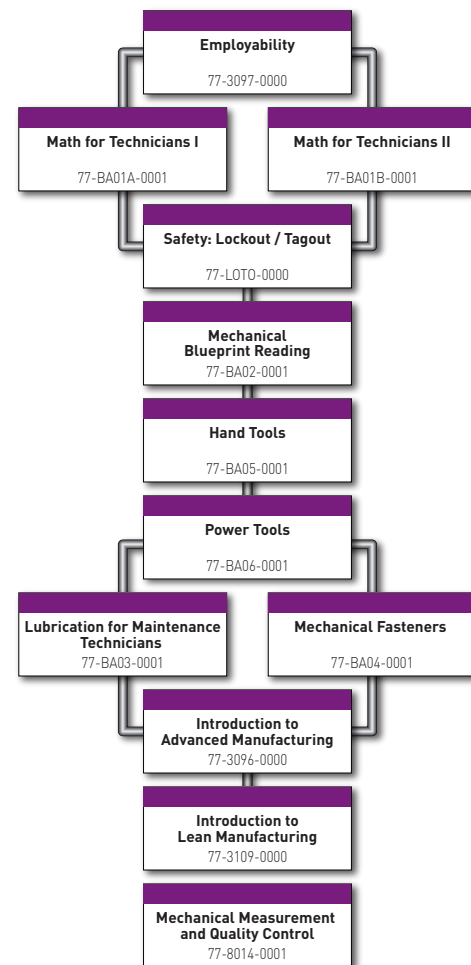
The series of courses is the most comprehensive virtual training for industry available and can be enhanced with hardware kits to deliver concentrations specific to the type of industry careers relevant to the region of the school.

Intelitek Foundation Skills Program



The Foundations Skills program is a virtual training program ideal for high schools and post-secondary institutions looking to provide job ready skills for tomorrow's essential careers. This course enables any learner to acquire the foundation knowledge necessary for lifelong success in the field of Advanced Manufacturing.

In addition to technical skills, the Foundations Skills program also addresses the industry requirement for entry level employees to have appropriate employability skills. By including portions of the SkillsUSA Career Skills Education Program (CSEP), learners obtain essential job skills that make for successful work experiences.



Advanced Foundation Skills

Like the foundation skills bundle, the advanced program is a series of courses that prepare students for careers in industry.

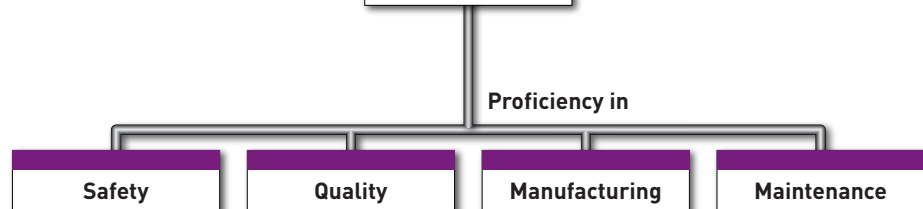
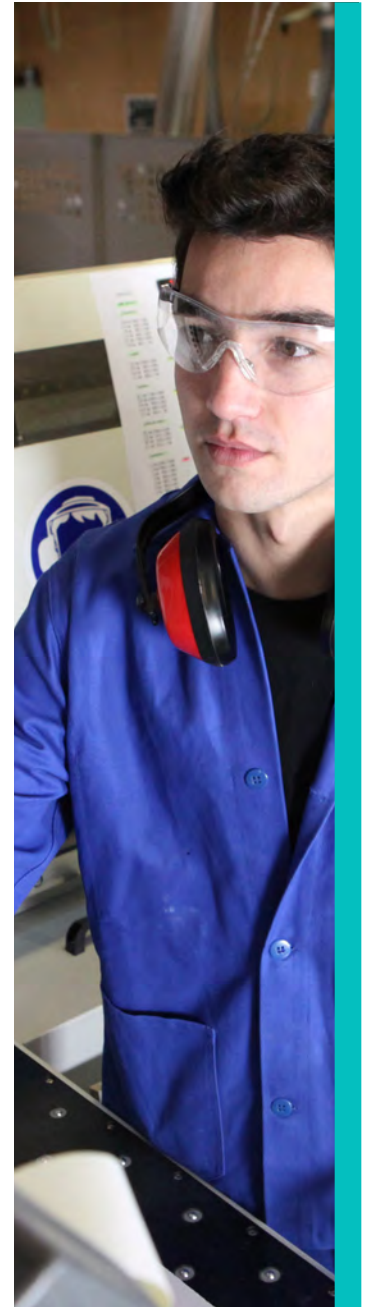
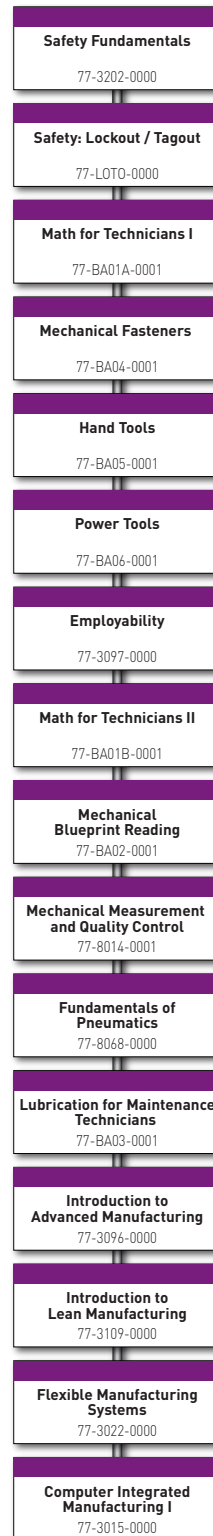
This more comprehensive set of courseware has been mapped to the requirements of industry wide certifications for production technicians. Students who complete this series of courses have all the skills and knowledge required to successfully take the certification exam offered by organizations in industry.

SCOPE OF TRAINING

The Advanced Foundation Skills program educates students on four key areas, all highly relevant to advanced jobs in manufacturing and production:

- Safety
- Quality Practices & Measurement
- Manufacturing Processes & Production
- Maintenance Awareness

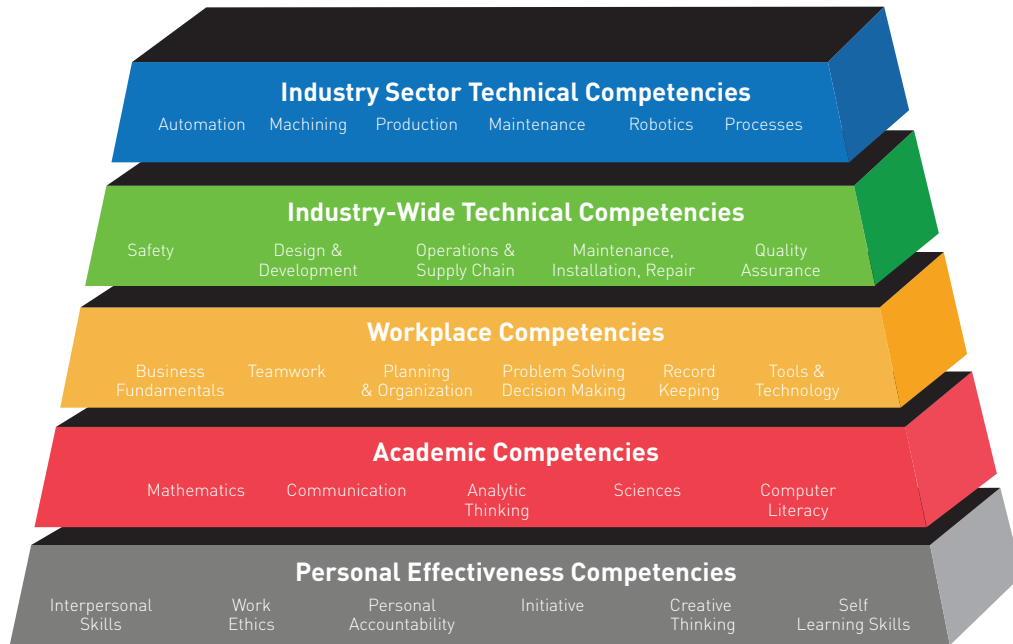
Candidates who excel in all four areas of manufacturing expertise will succeed best when they enter into industry and will increase the success rate for the certification and proficiency tests.



Solving the Challenge of Educators

The shortage of skilled workers demands programs that can deliver the knowledge and skills necessary to support a manufacturing workforce.

- 82% of US manufacturers report a moderate or serious shortage in skilled production workers.¹
- 600,000 US jobs in manufacturing are unfilled today because employers can't find workers with the right skills.¹



MANUFACTURING CURRICULUM

Safety Fundamentals

HOURS OF INSTRUCTION: 15

TYPE 

Safety Fundamentals is one of the most important aspects of an industrial training program. This dedicated safety module explores all aspects of manufacturing and workplace safety with the objective of educating students about safety norms, procedures and laws.

Students will have a high level of regard for safety practices after completing this course

LANGUAGES  

COURSE OUTLINE

- Introduction to OSHA and Safety Responsibilities/
- Safety in the Workplace
- Personal Protective Equipment (PPE)
- Safety Procedures
- Production Team Training & Responsibilities
- Product Development
- Customer Service

CATALOG #: 77-3202-0000

Math for Technicians I

HOURS OF INSTRUCTION: 14

TYPE 

Mathematics for Technicians I is designed to equip technicians with the math skills they are likely to need on a daily basis. Topics covered include arithmetic and algebra, types of numbers (whole numbers, fractions, and decimals), percentages, ratios and proportions, systems of measurement, geometry, and trigonometry

The curriculum conveys skills based math through nine virtual activities, providing students with fundamentals they will encounter in a variety of career and industrial environments.

LANGUAGES  

COURSE OUTLINE

- Working with Arithmetic and Algebra
- Working with Whole Numbers
- Working with Fractions
- Working with Decimals
- Working with Percentages
- Working with Ratios and Proportions
- Working with Systems of Measurement
- Working with Geometry
- Working with Trigonometry

CATALOG #: 77-BA01A-0001

Safety: Lockout/Tagout

HOURS OF INSTRUCTION: 9

TYPE 

Lockout/Tagout procedures are critical in creating a safe work environment. Lockout Tagout delivers skills-based curriculum through virtual and hands-on activities. Students learn all aspects of lockout/tagout procedures in industrial environments.

Through interactive activities, students learn about lockout devices, conducting energy control analysis, performing lockout/tagout and more

LANGUAGES  

COURSE OUTLINE

- Acquiring Lockout/Tagout Basics
- Attaching Lockout Devices
- Completing and Attaching Tagout Devices
- Conduct energy control analysis
- Perform lockout/tagout procedure
- Perform lockout/tagout release

CATALOG #: 77-LOTO-0000

Math for Technicians II

HOURS OF INSTRUCTION: 14

TYPE 

Math for Technicians II applies advanced mathematics concepts to everyday tasks. Through interactive activities students learn about drive ratios, Ohm's Law, mechanical principles, and how these concepts apply in the engineering and industrial environments.

LANGUAGES  

COURSE OUTLINE

- Working with Conversion Formulas
- Applying Mechanical Principles
- Calculating Drive Ratios
- Calculating Speed Reducer Service Factor
- Using Ohm's Law in Series and Parallel Circuits
- Converting Binary, Binary Coded Decimal (BCD), Hexadecimal and Decimal Numbers
- Calculating Pressure, Force, Head and Flow
- Calculating Shim Requirements
- Selecting Pipe Size

CATALOG #: 77-BA01B-0001

Mechanical Blueprint Reading

HOURS OF INSTRUCTION: 18

TYPE 

Blueprint Reading delivers skills-based curriculum through virtual activities. Students learn all aspects of reading and interpreting blueprints in engineering and industrial environments, including views, tolerances, cutting planes, thread dimensions, and welding symbols.

LANGUAGES  

COURSE OUTLINE

- Identifying Lines and their Functions
- Single, Multiple and Auxiliary View
- Reading and Locating Blueprint Dimensions
- Determining Tolerances
- Identifying Thread Dimensions
- Identifying Tapers and Machine Surfaces
- Cutting Plane and Sections
- Geometric Dimensioning, Wear Limits and Assembly Drawings
- Identifying Welding Symbols
- Reading Plot Plans
- Reading Footing, Foundation and Floor Plans
- Reading Reinforced Concrete and Structural Steel Prints

CATALOG #: 77-BA02-0001

Power Tools

HOURS OF INSTRUCTION: 9

TYPE 

Power Tools play a key role in the everyday tasks of technicians. Power Tools delivers twelve skills-based activities, in which students learn all aspects of using power tools.

Power Tools may be taught as a virtual module, delivered entirely online with interactive activities, or as a blended module with both virtual and hardware-based activities. A separate hardware package is available with all the tools covered in the activities

LANGUAGES  

COURSE OUTLINE

- Shop Safety
- Power Drills
- Drill Presses
- Rotary Tools
- Jigsaws
- Reciprocating Saws
- Circular Saws
- Table Saws
- Bandsaws
- Sanders

HARDWARE (OPTIONAL)

- Power tools hardware package

CATALOG #: 77-BA06-0001

10-BA06-0000

Hand Tools

HOURS OF INSTRUCTION: 26

TYPE 

Hand Tools play a key role in the everyday tasks of technicians. Hand Tools features skills-based curriculum delivered through seventeen activities in which students learn all aspects of using hand tools.

Hand Tools may be taught as a virtual module, delivered entirely online with interactive activities, or as a blended module with both virtual and hardware-based activities. A hardware package is available with all the tools covered in the activities.

CATALOG #: 77-BA05-0001

10-BA05-0000

LANGUAGES  

COURSE OUTLINE

- Shop Safety
- Rulers and Tape Measures
- How hand tools may be misused or abused
- Calipers and Feeler gauges
- Squares and Levels
- Knives
- Scribes and Punches
- Work Holding Devices
- Hammers
- Chisels
- Saws
- Pliers
- Cutters
- Files & Deburring Tools
- Drivers
- Hex Keys
- Wrenches
- Socket and Torque Wrenches

HARDWARE (OPTIONAL)

- Hand tools hardware package

Lubrication for Maintenance Technicians

HOURS OF INSTRUCTION: 23

TYPE 

Lubrication for Technicians conveys skills-based curriculum through virtual and hands-on activities.

Students learn about lubrication equipment, application methods lubrication schedules, special purpose greases, synthetic lubricants, packing bearings and more.

LANGUAGES  

COURSE OUTLINE

- Lubrication Fundamentals
- Lubrication Terms
- Identifying Lubricating Oils
- Identifying General Purpose Greases
- Identifying Special Purpose Greases
- Applying Lubricating Oils
- Applying Lubricating Greases
- Bearing Lubrication
- Setting Up a Lubrication Schedule
- Selecting Synthetic Lubricants
- Grease Guns
- Bearing Packers
- Grease Lubricators
- Drop Feed Oilers
- Electric Chain Oilers

CATALOG #: 77-BA03-0001

Mechanical Fasteners

HOURS OF INSTRUCTION: 18

TYPE 

Mechanical Fasteners may be taught as a virtual module, delivered entirely online with interactive activities, or as a blended module with both virtual and hardware-based activities.

Through twelve activities, students identify and work with the many types of fasteners used in engineering and industrial environments. For blended lab applications, a separate hardware package is available with all the tools covered in the activities

LANGUAGES  

COURSE OUTLINE

- Screws and Bolts
- Threaded Fastener Selection
- Thread Standards
- Creating and Repairing Threads
- Nuts
- Torque Wrenches
- Bolt Extractor
- Washers
- Rivets
- Adhesives
- Hook and Loop Fasteners
- Cable Ties

HARDWARE (OPTIONAL)

- Fasteners hardware package

CATALOG #: 77-BA04-0001
10-BA04-0000

Pneumatics Technology 1: Fundamentals of Pneumatics

HOURS OF INSTRUCTION: 15

TYPE  

Introduces the principles of pneumatics and pneumatically controlled systems commonly used in automated manufacturing environments.

LANGUAGES  

COURSE OUTLINE

- Introduction to Pneumatics
- Atmospheric Pressure & Vacuum
- Atmospheric Pressure, Vacuum and Mechanical Work
- The Double-Acting Cylinder
- 3/2 Valves
- Controlling a Piston with PBs
- 5/2 Air-Operated, Air-Returned Valve
- 5/2 Air-Air Valves
- Laws of Gases
- 3/2 Air-Operated, Spring-Returned Valve
- Spot Welding System
- 3/2 Roller Valves
- Task - A Semi-Automatic System

CATALOG #: 77-8068-0000

Employability

HOURS OF INSTRUCTION: 15

TYPE 

Employability offers Industry and Career Skills in a module that aims to prepare high school and college students to apply for, and succeed in their first job.

Developed with employability experts at SkillsUSA, the module covers job application topics such as setting career goals, résumé preparation and interview skills. It provides training on core employee skills such as time management, teamwork, communication, conflict resolution, work ethics and more

LANGUAGES  

COURSE OUTLINE

- Time-Management Techniques
- Personal Qualities Desirable for the Workplace
- Interpersonal Communication
- Conflict Resolution
- Teamwork
- Problem-Solving Techniques
- Decision-Making Skills
- Business and Personal Ethics
- Business Etiquette and Ethical Computer Behavior
- Employer-Employee Relationships
- Proper Communication with Diverse Populations
- Career Goals
- Resumes and Cover Letters
- Job Applications
- Potential Employer Interviews
- Interviewing Skills

CATALOG #: 77-3097-0000

Hydraulics Technology 1: Fundamentals of Hydraulics

HOURS OF INSTRUCTION: 15

TYPE  

Introduces students to the principles of hydraulics and the use of fluid power in automated manufacturing environments.

LANGUAGES  

COURSE OUTLINE

- Basic Principles of Hydraulics
- Pressure and Force
- Pressure Gauges
- Hydraulic Power Transmission
- Hydraulic Power Source
- Determining Component Characteristics
- Controlling the Flow Rate
- Flow Control Valves
- 4/3 Closed-Center Valve-Construction
- 4/3 Closed-Center Valve Characteristics
- Power Transformation Using a Double-Acting Cylinder
- Loading a Piston
- Controlling the Piston Location

CATALOG #: 77-8008-0000

Introduction to Advanced Manufacturing

HOURS OF INSTRUCTION: 15

TYPE 

Introduction to Advanced Manufacturing introduces the student to the manufacturing industry and its associated career paths. Students learn about careers offered in manufacturing and about how to prepare for and then pursue those careers.

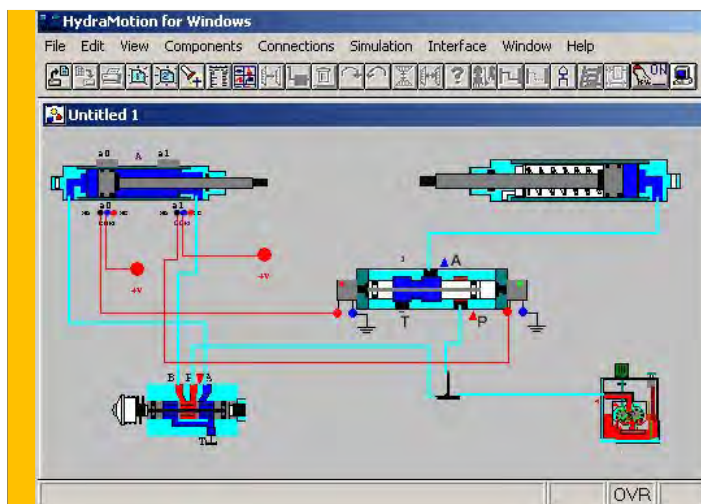
Students learn how manufacturing companies operate. A number of common manufacturing technologies are described. The use of computers and automation in manufacturing is explored. Students work on hands-on projects designed to provide insight into the world of manufacturing..

CATALOG #: 77-3096-0000

LANGUAGES  

COURSE OUTLINE

- Definition of Manufacturing
- History of Manufacturing
- Considering Career Choices
- Conducting a Job Search
- Preparing a Resume
- Writing a Cover Letter
- Planning and Staffing a Manufacturing Company
- Understanding Product and Strategy Selection
- Identifying Manufacturing Processes
- Understanding CAD, CAE, CAM, CNC
- Understanding Statistical Process Control
- Understanding Forecasting Software and Computer Simulation Modeling
- Understanding the Role of Automation in Manufacturing
- Understanding the Role of Flexible Manufacturing Systems
- Understanding Computer Integrated Manufacturing
- Understanding the Role of Quality Control



Introduction to Lean Manufacturing

HOURS OF INSTRUCTION: 14

TYPE 

Lean Manufacturing explores the principles and techniques involved in lean manufacturing including minimizing waste in production, and improving work flow in industrial processes

LANGUAGES  

COURSE OUTLINE

- Defining Lean Manufacturing
- Understanding Waste
- Identifying Waste in a Workplace
- Designing the Mfg Workplace
- Redesigning a Workstation
- Mistake Proofing
- Fundamental Concepts in Lean
- Designing Lean Production Processes
- Applying Lean to a Household Task
- Task Analysis and Design
- Lean Production Scheduling Systems
- Problem Solving Tools

CATALOG #: 77-3109-0000

Mechanical Measurement and Quality Control

HOURS OF INSTRUCTION: 15

TYPE 

MMQC enables students to gain a solid foundation of knowledge and skill in performing measurements and calculations. Students use precision measurement tools, such as steel rule, tape measure, protractor, micrometer, height gauge, various calipers and dial indicators.

Students gain proficiency in reading mechanical drawings, in selecting the proper tools for inspecting parts and in preparing quality control/ inspection reports.

A separate hardware package is available with all the tools covered in the activities

CATALOG #: 77-8014-0001
10-9410-0000

LANGUAGES  

COURSE OUTLINE

- Accuracy, Precision and Measurement Tools
- Units of Measurement and Conversion
- Fractions, Decimals, and Rounding
- Scaled Measurement Tools
- Vernier, Dial, and Digital Calipers
- Micrometers
- Height Gauges and Dial Indicators
- Fixed Gauges
- Transfer Measurement Tools
- Statistical Analysis
- Statistical Process Control
- Nominal Dimensions and Tolerance
- Parts Inspection and Inspection Reports

HARDWARE (OPTIONAL)

- MMQC hardware package

Flexible Manufacturing Systems (FMS)

HOURS OF INSTRUCTION: 15

TYPE

LANGUAGES

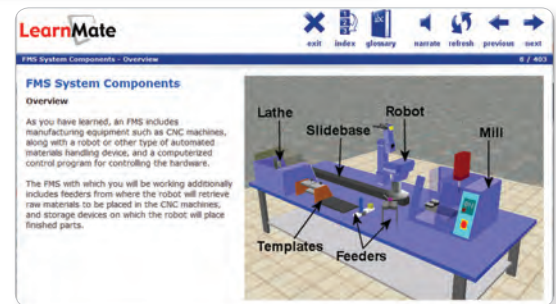
The Flexible Manufacturing System (FMS) course exposes students to automation and industrial applications by combining CNC technology with robotics and materials handling. Students develop and edit programs, record precise robotic positions, accurately mill parts, and synchronize mill and robot operation.

Students gain "virtual hands-on" experience in CNC and robot programming, especially in I/O commands. Students design solutions for industrial FMS applications with emphasis on real industrial concerns, such as optimized CNC and robotic programming and accurate machine tending.

COURSE OUTLINE

- Introduction
- CNC Machining
- RoboCell Simulation and Control Software
- Designing an FMS Workcell
- Expanding the Workcell
- Writing a Program
- Programming Mill Operations
- Conditional Programming
- Storing Finished Parts
- Multiple Part Programming
- Lathe Operations
- Multiple Part Lathe Operations
- Program Integration
- Designing the Final Project
- Running the Final Project

CATALOG #: 77-3022-0000



Computer Integrated Manufacturing (CIM) 1

HOURS OF INSTRUCTION: 15

TYPE

LANGUAGES

Computer Integrated Manufacturing (CIM) introduces the basic concepts and procedures of CIM production as well as the main components and devices in a CIM cell.

Using OpenCIM Software with a fully simulated industrial CIM, students learn about all the aspects of a CIM production cycle, from customer order and inventory control, through automated manufacturing of materials into finished parts, to quality inspection and final delivery.

CATALOG #: 77-3015-0000

COURSE OUTLINE

- Introduction to CIM
- Introducing OpenCIM s/w
- Parts and Production Flow
- Storage Setup
- Production Planning
- Processes and Machine Definition
- Part Definition
- Defining a Product Part
- Producing a New Part
- Timing and Optimization
- Viewing Production Details in the device view and in the storage view
- Defining Part Production in the Lathe
- Integrated Production
- Tracking Integrated Production

Computer Integrated Manufacturing (CIM) 2

HOURS OF INSTRUCTION: 15

TYPE

LANGUAGES

CIM 2 builds on the basic concepts covered in CIM 1. Students design, set up and operate CIM cells and learn about mass production, robotic systems, location planning, QC devices, part feeding, assembly, purchase orders, MRP and CIM databases.

COURSE OUTLINE

- Mass Production and CIM
- Robotic Systems
- Location Planning
- QC Devices
- Feeders
- Adding an Assembly Station
- Assembled Part Production
- Assembled Product Characteristics
- Expanding Assembly Capabilities
- Subassemblies and Multi-Level Assembly
- Purchase Orders and MRP
- Multi-Level Assembly Production
- CIM Databases
- Conclusion

CATALOG #: 77-3016-0000

Intelitek Learning Solutions

Intelitek transforms education across the globe with comprehensive technology learning solutions. Our innovative tools and technologies empower instructors and inspire students to improve the world around them. We understand the changing needs of your career and technology classrooms and design flexible solutions that meet those needs.

With sustainable support and professional development to ensure the continued success of your programs, Intelitek programs deliver the competencies needed for in-demand careers.

At Intelitek we are producing results for students, teachers, nations and economies.

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