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 technical skills necessary for lifelong success in industry. In addition, the program focuses heavily on employability skills like critical thinking, problem solving, teamwork, and leadership.
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.
The Foundations Skills program is a training program ideal for high schools and post-secondary institutions looking to introduce job ready skills for tomorrow’s essential careers. Delivered online or face to face, the courses provide learners the foundational 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.

The Foundations of Manufacturing offers optional hardware bundles to accompany some of the curricula and provide students with hands on experience they may never have received before.
Industry 4.0 for Manufacturing

As Industry 4.0 becomes more widely adopted, thousands of new jobs and new career options will be created that do not currently exist.

The Intelitek Industry 4.0 training framework is a stackable and modular approach designed for students or incumbent employees in different phases of their academic life or working career.

The framework has three levels that differentiate between introductory level and advanced design/integration levels.

Working with industry, Intelitek has crafted a comprehensive training roadmap with curriculum, smart factory trainers and lab exercises focused on technical skills and problem-solving skills.

The framework aligns to industry certification programs including industry micro-certifications from leaders like Siemens PLM, Yaskawa MotoMan Robotics and Cognex machine vision.

Industry 4.0 training enables technical high schools, 2 and 4-year college programs, as well as industry training programs and apprenticeships, to offer an education to their students that leads to in-demand jobs and career advancement.

**INTELITEK INDUSTRY 4.0 CURRICULUM**

- Introductory and in depth curriculum covering Industry 4.0 concepts and technology
- Training provides students detailed knowledge of how Industry 4.0 will affect their role and work environment
- Students will understand and learn the benefits of smart maintenance, operational efficiency, remote monitoring and flexible mass production.
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.

"In addition to the manufacturing, the students can also use the course and or the certification to get credit hours towards an engineering technology degree"

Laurie Newkirk  
Instructor, Automation and Product Technology  
Whitlacochee Technical College  
Florida

¹ Source: Manufacturers' Association (2020)
MANUFACTURING CURRICULUM

Safety Fundamentals

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.

Math for Technicians I

The course equips technicians with the math skills they are likely to need. Topics covered include arithmetic and algebra, types of numbers (whole, 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 in a variety of career and industrial environments.

Math for Technicians II

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.

Mechanical Blueprint Reading

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.

COURSE OUTLINE
- Analyzing and Interpreting Blueprints
- 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
Hand Tools

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.

Power Tools

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.

Lubrication for Maintenance Techs

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.

Introduction to Lean Manufacturing

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

Mechanical Fasteners

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.

Employability

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.
Mechanical Measurement and Quality Control

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.

Intro to Advanced Manufacturing for Industry 4.0

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.

COURSE OUTLINE

- Definition of Manufacturing
- The History of Manufacturing
- Careers in Manufacturing
- Seeking a Manufacturing Career
- Types of Manufacturing Companies
- Manufacturing in the Design Process
- Big Data Analytics and Industry 4.0
- Planning and Staffing a Manufacturing Company
- Manufacturing Processes
- Computers in Manufacturing
- Statistical Process Control
- Computer Simulation Modeling
- Automation in Manufacturing
- Cyber-Physical Systems
- Datafication
- Flexible Manufacturing Systems
- Computer Integrated Manufacturing

LANGUAGES

EN
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TYPE

COURSES

77-8014-0001

15 hours

77-3301-0014

15 hours
Introduction to Industry 4.0

Introduction to Industry 4.0 offers a window into the impact of the Fourth Industrial Revolution and its accompanying technologies on the modern manufacturing industry. Using examples and analogies from real-world enterprises, the course explores Industry 4.0 concepts, processes, and technologies, and testifies to how these components interconnect together in order to grow the manufacturing industry of the future.

COURSE OUTLINE
- What is Industry 4.0?
- Technologies that Drive Industry 4.0
- Challenges for Industry 4.0
- Quality 4.0
- Supply Chain 4.0
- Data Standardization
- Internet and Ethernet
- The Internet of Things
- Industrial Control Systems and IIoT
- Big Data
- Automation & S/W Technologies
- VR, AR, and AI
- Maintenance 4.0
- Flexible Production
- Maturity Models for Industry 4.0

Introduction to IIoT & Connectivity

Introduction to the Internet of Things and Connectivity focuses on the vast network of smart sensors and devices and their impact on the manufacturing world. This course also explores topics related to the interconnection of IoT and industrial devices, such as SCADA systems, cloud computing, edge computing, and machine vision systems.

COURSE OUTLINE
- Introduction to Sensors, Smart Sensors, & Actuators
- Introduction to PLCs
- IoT and IIoT
- IIoT Opportunities, Risks, and Challenges
- The Potential of Connectivity in IIoT
- How a Sensor Connects to the Cloud
- Introduction to Edge Computing
- SCADA Systems
- Vision Systems
- Architecture of Smart Manufacturing Systems
- Introduction to Communication Protocols
- Tracking Methods

Advanced Industry 4.0 Concepts

This course explores how technologies interact with each other and with industrial components to create efficient, productive, and profitable enterprises. Emphasizing use cases, the course investigates digital threads, flexible manufacturing, and asset tracking.

Prerequisite: Intro to Industry 4.0 (lvl 1)

COURSE OUTLINE
- Digital Factory Tour
- The Digital Thread
- VR and AR in Manufacturing
- Smart Sensors in Manufacturing
- Cyberphysical Systems
- Flexible Manufacturing Systems
- Additive Manufacturing
- Maintenance 4.0
- Inventory and Asset Management

Intro to Networking & Cyber Security

Introduction to Networking and Cybersecurity is an in-depth look at communication exchange in modern industry, from the Internet to the Industrial Internet of Things (IIoT) and Cloud technologies. The course covers key networking principles, and concentrates on the structure and importance of industry-focused cybersecurity exploring threats that manufacturing entities have to contend with and combat.

COURSE OUTLINE
- IP Networking Basics
- Communication Protocols
- Cloud Computing
- Components of the Manufacturing Network
- Securing Digital Manufacturing Operations
- Cyber Threats & Basic Cybersecurity Practices
- Essential Cyber System Technologies
- Malware & Malware Protection
- Identifying Cyber Attacks & Cyber Breach Response
- IIoT Cybersecurity Basics
- Cloud Cybersecurity Basics
- Cybersecurity Resources

Intro to Big Data for Industry 4.0

The curriculum explores the world of data, including its collection, processing, management, visualization, and its uses. The course delves into big data in cutting-edge manufacturing, and machine learning, predictive analytics, modeling, simulation, improvement of processes and progress indicators.

COURSE OUTLINE
- Introduction to Big Data
- Characteristics of Big Data and Dimensions of Scalability
- Intelligent Decision Making and Getting Value Out of Big Data
- Data Collection and Management
- Algorithms, Computing, and Descriptive Statistics
- Data Analysis & Visualization of Data
- Predictive Analytics and Modeling
- Machine Learning
- Introduction to KPIs & Improving KPIs with Big Data
- Database Fundamentals including Data Warehousing & Data Mining
- Cloud Computing for Big Data
- Data-Driven Innovation

Advanced IIoT and Connectivity

Advanced IIoT and Connectivity focuses on the network of smart sensors and devices that is the Internet of Things (IoT) and how systems are integrated and deployed in industrial environments.

Prerequisite: Intro to IoT/Connectivity (lvl 1)

COURSE OUTLINE
- Smart Sensors
- PLC Functions and Applications
- Machine to Machine (M2M)
- Cloud Connectivity
- SCADA Systems
- Implementing IoT
- Design Modularity
- Industrial IoT Reference Architecture (IIIRA)
- IoT Protocols and Standards
- Material Identification
- Driving Manufacturing with IoT
Advanced Cyber Security for Industry 4.0

The course explores cybersecurity concepts and investigates the ways that cyber-attacks can occur and be prevented in industrial control systems and IIoT networks.
Prerequisite: Intro to Cybersecurity (lvl 1)

Software Technologies for Industry 4.0

This course explores the different types of software that are essential for a production company’s success in the automated commercial and industrial landscape.

Advanced Data Science for Industry 4.0

Data collection, storage, and analytics play a massive role in the manufacturing industry. The vast amounts of data generated by production processes and the potential involved in the use of this data creates substantial economic opportunities for businesses that take advantage of them. Advanced Data Science for Industry 4.0 explores how the proper use of data can help manufacturing enterprises improve their bottom line.

Industry 4.0 for Business

A look at industry 4.0 from the business perspective. The course will look at the benefits and justifications for manufacturing.

Industry 4.0 - The Ecosystem

High level look at the Industry 4.0 Smart manufacturing in industry and the trends and use cases for technology.
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.