intelitek

INDUSTRY 4.0

Curriculum & Certification

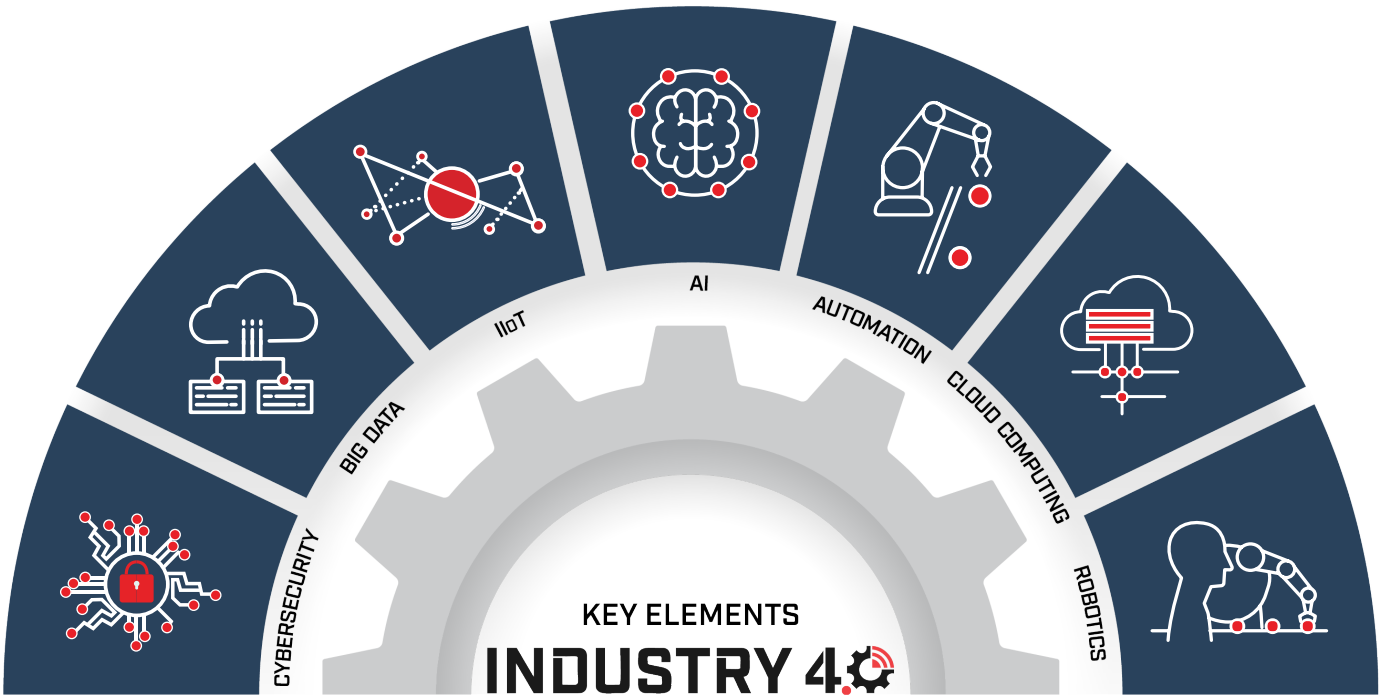
Skill Pathways for Advanced Manufacturing

Introducing a structured, skill-tiered program to educate new and veteran trainees with Industry 4.0 competencies that will help them succeed in their jobs and complete industry recognized certifications. This multi-disciplinary and system-based training approach introduces students to the job skills and employment skills that will help them succeed in leading-edge industry.

CYBERSECURITY | AI | AUTOMATION | CLOUD COMPUTING | ROBOTICS | IOT | BIG DATA

Reshaping Manufacturing Training

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



NEW SKILLS/NEW ROLES

- As more complex systems are integrated in manufacturing and industrial processes, multidiscipline and systems knowledge and experience is required. Automation, integration, systems, communications, and networking are essential skills in the modern industrial workplace.
- Smart sensors, cloud computing, and IIoT enable massive data collection and real time analysis from the factory floor. Big Data will be a cornerstone of production efficiency and predictive maintenance.
- Advanced robotics automate processes, reduce errors and increase quality of processes.
- Powered by software tools enabling simulation, visualization, quality control, planning and much more, Industry 4.0 is a quantum step forward for industry.

The demand for skilled employees in the manufacturing sector continues to grow. There are more job openings than applicants. This gap is even more severe in advanced companies that have embraced Industry 4.0 and require technical skills to install, maintain, develop and integrate systems.

Filling these roles is not only dependent on what we teach, but also on how we teach. Intelitek's approach to hands-on learning with cross-disciplnary curriculum, manufacturing software and simulation tools, combined with a heavy focus on Project Based Learning and employability skills, is designed to teach students to adapt and self educate as the world they work in changes.

Building Expertise in Industry 4.0 Technologies

Intelitek Industrial Training Programs for Industry 4.0

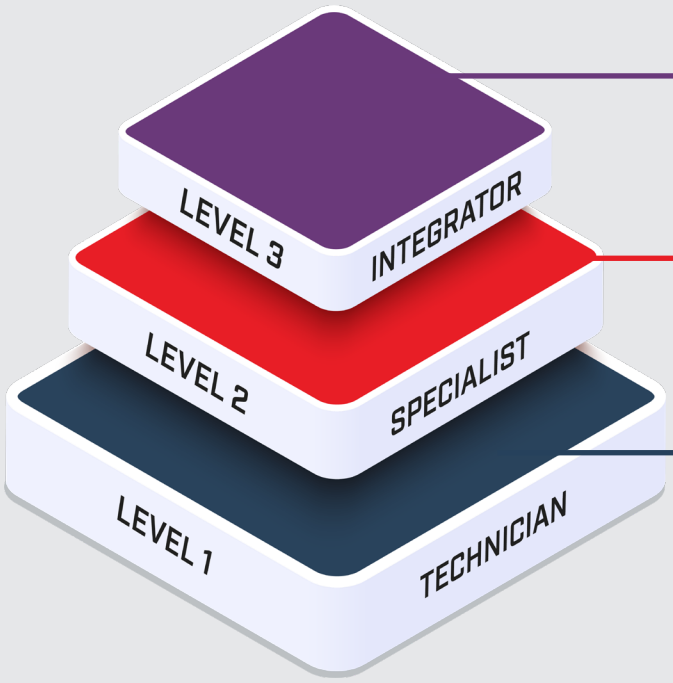
The Intelitek Industry 4.0 training framework is modelled around the ARM Industry 4.0 blueprint and enables a stackable and modular approach where certificates and microcredentials can be awarded to students or incumbent employees in different phases of their academic life or working career.

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.



Industry 4.0 Integrator

Design | Integration | Optimization

Industry 4.0 Integrator
Systems Designer
Process Engineer
Integration Specialist
Operations Supervisor

Industry 4.0 Specialist

Processes | Programming | Interoperability

Mechatronics Specialist
Robotics Specialist
Applications Engineer
Systems Operator
Maintenance Supervisor

Industry 4.0 Technician

Technical Expertise | Micro-credentials | Maintenance

Electromechanical Technician
Production Technician
Maintenance Technician
Operator/Installer

EMPLOYABILITY

PROJECT MANAGEMENT · CRITICAL THINKING · TIME MANAGEMENT · SAFETY · TEAMWORK
INTERPERSONAL COMMUNICATIONS · PLANNING · PROBLEM SOLVING · ADAPTABILITY

Partnering with Industry for Certification

Partnering with leading industry vendors like Siemens, Cognex, and Yaskawa to deliver micro-certifications and aligning our curriculum to the ARM Industry 4.0 blueprint and other industry recognized certifications, the iCert4.0 framework covers a wide gamut of required skills. Using the Intelitek blended learning solutions with e-learning content, simulations, training equipment, train the trainer program and the certification assessments – students can gain the skills and credentials they need to advance in their careers.

The iCert4.0 framework is aligned with:

- ARM Industry 4.0 competencies for Industry 4.0 certification
- NIMS Smart I4.0 emerging standards

It's All About Employability

The concept of Industry 4.0 centers around multi-disciplinary systems and integration. Industry employers are searching for candidates who have soft skills in addition to technical skills.

In the iCert4.0 program, the core micro-certifications are augmented with modular curriculum, granular content, hands-on projects and exercises in the lab or through apprenticeships. With this interactive, collaborative approach, students learn planning, time management, communication and job skills that enhance their employability

ICERT4.0 ENABLES:

- Advanced level understanding of Industry 4.0 concepts
- Transition between fundamental skills to industry 4.0 specific skills
- Certifications and micro-credentials

Industry 4.0 Training Pathways

Intelitek advanced manufacturing training programs and industry 4.0 training programs are designed to build a flexible learning structure for programs offered in schools and industry. The framework is a recommended pathway that can be adjusted to the focus and level your program needs.

Industry 4.0

LEVEL 1
TECHNICIAN

Entry level training for a production technician in a maintenance or operator role.

Industry 4.0

LEVEL 2
SPECIALIST

Advanced training for a production specialist in a maintenance, operator, or implementor role.

Industry 4.0

LEVEL 3
INTEGRATOR

Advanced level training for a production integrator in an operator, implementor, designer or managerial role.

iCert 4.0 Framework Course Map

iCert4.0 is a framework for education programs focused on fields related to industry. School programs for industrial maintenance, mechatronics, industrial automation, and advanced manufacturing can model their programs on the core skills and Industry 4.0 specific skills include in the program.

Areas of knowledge for level 1 courses

- Foundations of Manufacturing
- Introductory Level Electrical & Mechanical Systems
- Introductory Level Robotics
- Introductory Level Fluid Power
- Introductory Level Automation
- Advanced Manufacturing Concepts

Introduction to Industry 4.0

Introduction to IIoT & Connectivity

Introduction to Networking & Cyber Security

Introduction to Big Data

Areas of knowledge for level 2 courses

- Advanced Level Electrical & Mechanical Systems
- Advanced Level Robotics
- Advanced Level Fluid Power
- Advanced Level Automation
- Machine Vision
- Subtractive Manufacturing (CNC Machining)
- Additive Manufacturing (3D Printing)

Advanced Industry 4.0 Concepts

Advanced IIoT & Connectivity

Advanced Networking & Cyber Security

Intro to Industry 4.0 Software Technologies

Areas of knowledge for level 3 courses

- Manufacturing Processes (CIM/FMS)

Advanced Data Science

Industry 4.0 The Ecosystem

Industry 4.0 for Business

LEVEL 1

Fundamentals of Manufacturing

Students start by developing a core understanding of manufacturing concepts and components and learning core advanced manufacturing skill sets. The industry 4.0 program provides a broad interdisciplinary overview of the theory and parts of industrial plants. The outcome is a core knowledge of systems for a machine operator or maintenance technician role with responsibility for competent operation and service of equipment.

Industry 4.0 training courses include:

INTRODUCTION TO INDUSTRY 4.0

Introductory course providing an overview of Industry 4.0 concepts and technologies.

INTRODUCTION TO IIOT & CONNECTIVITY

Overview of smart sensors, IoT, system connectivity, and identification techniques in Industry 4.0

INTRODUCTION TO NETWORKING & CYBERSECURITY

Overview of networking and cybersecurity in IT / OT systems, including network fundamentals, identification of cyber threats and cyber-protection.

INTRODUCTION TO BIG DATA

Overview of the concepts of Data Science and the role of data in the Smart Factory, including data collection, analysis and how this enables predicitive maintenance.

LEVEL 1
GRADUATE CAREER OPPORTUNITIES

- Industrial Maintenance Technician
- Electromechanical Maintenance Technician
- Machine Operator
- Production Technician

Graduates will be able to:

- Explain the concepts of Manufacturing in an Industry 4.0 Smart Factory
- Understand and operate independently in an industrial setting
- Identify the role of components in manufacturing processes
- Operate and maintain a system at maximum capacity including recognizing, troubleshooting, and repairing malfunctions
- Describe the function of system components and the interactivity between machines, control elements, and sensors
- Fully comprehend the role of smart sensors, and IoT connectivity in a plant
- Understand fundamentals of data networks and be fully aware of cybersecurity threats
- Have a fundamental understanding of the role operational data plays in a plant and how to use it.

LEVEL 2

Advanced Manufacturing

Level 2 students become specialists, learning to understand the entire system and the codependence of elements. The objective is for graduates to be skilled in implementing, operating, optimizing, and analyzing the system as a whole. The outcome will be that they understand how components interact and have an in-depth knowledge of the operation, programming and maintenance of the system

Industry 4.0 training courses include:

ADVANCED INDUSTRY 4.0 CONCEPTS

Advanced course covering the architecture and protocols of Industry 4.0 systems

ADVANCED IIOT & CONNECTIVITY

Advanced course on sensors and connectivity. The course delves into machine to machine communications and protocols. The course is accompanied by labwork for hands-on learning.

ADVANCED NETWORKING & CYBERSECURITY

Curriculum with Hands-on lab for Cybersecurity, focused on how to Identify, Protect, Detect, Respond, & Recover from cyber threats in Industry 4.0 systems

INDUSTRY 4.0 SOFTWARE TECHNOLOGIES

Overview of the Software technologies and applications that transform traditional production lines into Smart Production lines.

Graduates will be able to:

- Understand, operate, troubleshoot, and optimize production lines.
- Integrate smart sensors and inputs into automation-controlled systems
- Explain communications in industrial settings and be able to configure, connect, troubleshoot devices on the network
- Identify, avoid, and mitigate cyber threats
- Be familiar with advanced manufacturing software tools like Virtual Reality, Simulations, Digital Twining, Manufacturing Execution Systems (MES) and Artificial Intelligence

LEVEL 2
GRADUATE CAREER OPPORTUNITIES

- Robotics programmer
- Mechatronics specialist
- Automation specialist
- Applications Engineer
- Systems Specialist

LEVEL 3

Integration for Industry 4.0

At Level 3, students will learn to combine all their skills to design and develop integrated complex Industry 4.0 systems. The objective is to learn systems knowledge, sound engineering practices, and the business perspective of industry process and process design. The outcome will be students able to be part of Industry 4.0 integration, design, and planning teams.

Industry 4.0 training courses include:

ADVANCED DATA SCIENCE

Advanced course covering data science concepts and ways to benefit from the info that is collected from a Smart factory system.

THE ECOSYSTEM

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

INDUSTRY 4.0 FOR BUSINESS

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

LEVEL 3
GRADUATE CAREER OPPORTUNITIES

- Automation/Control Specialist
- Systems Integrator
- Manufacturing/Mechatronics Engineer
- Industry 4.0 Integrator/Engineer

Graduates will be able to:

- Utilize data collected and analyzed in real-time to implement advanced system operation and maintenance plans
- Understand the benefits of Industry 4.0, and the opportunities and risks of the technologies.
- Utilize connectivity, IIoT and cloud applications for system operation and operational efficiency.
- Explain how system modeling and simulation can support design, optimization, and predictive maintenance of production systems
- Model and simulate a manufacturing cell or system
- Design and implement manufacturing cell or system

INTEGRATED TRAINING SOLUTIONS

Industry 4.0 for Classroom & Lab Education

As with all technology training, it is essential to ensure students have the core theory as well as hands-on practical knowledge. Practical experience through project based learning, lab exercises, and capstone projects prepare students for work in industry. Intelitek Industry 4.0 training includes integrated platforms where students can practice with the technologies on actual industrial processes.

STANDALONE

STANDALONE LABS

State-of-the-art lab kits with activities are designed as independent, add on elements to augment advanced manufacturing training programs.

DEDICATED

INDUSTRY 4.0 TRAINERS

Computer Integrated Manufacturing and Flexible Manufacturing Systems designed with Industry 4.0 from the ground up provide comprehensive training.

INTEGRATED

INTEGRATED INDUSTRY 4.0

Robotics, machining, industrial maintenance and mechatornics training platforms can be upgraded to Industry 4.0 to enhance established training programs.

Blended Learning for Industry 4.0

- Online or instructor led courseware is complemented by practical labs and project work.
- Students implement, understand and program Industry 4.0 into existing infrastructure.
- Using advanced technologies, the integration benefits of Industry 4.0 become clear to students.
- Graduates learn the soft skills related to teamwork and communications common in modern advanced manufacturing.
- Integration of systems, automation, planning tools and virtualization through software in the lab.

Industry 4.0 Trainers introduce the theory, installation, configuration, operation and use cases for advanced industrial technologies:

- Smart Sensor Labs
- Process Control Labs
- IIoT Labs
- Software App Labs
- Cybersecurity Labs
- AR/VR Labs

Intelitek Industry 4.0 Training Program

Industry 4.0 is a concept where industrial processes and manufacturing plants take advantage of the most advanced technologies and use data collected in real time from the factory floor to monitor, maintain, and optimize in real-time.

The Intelitek training programs for Industry 4.0 focus on three aspects of training: First, the core technology skills so students can understand the technologies and how they work. Second, the interdependence of systems, the communications, automation, and interaction of systems within an industry 4.0 environment. And thirdly, the benefits of integrated industry 4.0 systems and the personal employability skills required to work in this new, collaborative world of industry.

intelitek®

18 Tsienneto Road. Derry, NH 03038 USA

+1-603-413-2600

info@intelitek.com

www.intelitek.com

35-2000-0038 Ver C