

FOUNDATIONS OF MANUFACTURING
EL-FOUNDATIONS

Safety Fundamentals	Employability	Introduction to Lean Manufacturing	Math for Technicians II	Power Tools	Blueprint Reading	Mechanical Measurement & Quality Control
Safety: Lockout/Tagout	Advanced Manufacturing for Industry 4.0	Math for Technicians I	Hand Tools	Mechanical Fasteners	Lubrication for Technicians	Introduction to Industry 4.0

ELECTRICAL SYSTEMS

MECHANICAL SYSTEMS

FLUID POWER

INDUSTRY 4.0 COMMUNICATIONS

AUTOMATION

SMART SENSORS

INDUSTRIAL ROBOTICS

INDUSTRY 4.0 DATA & ANALYTICS

MACHINING & DESIGN

INDUSTRY 4.0 FOR BUSINESS

BASIC POWER ELECTRICITY
EL-ELEC-LV1

- Electrical Circuits
- Resistors & Conductors
- LCR Circuits
- Motors & Generators

ELECTRICAL CONTROL SYSTEMS
EL-ELEC-LV2

- Overload/Overcurrent Protection & Monitoring
- Transformers
- Electric Motors
- Electro-magnetic Motor Starters
- Relays, Timers & Time Delay Relays
- Pilot Devices
- Solid-State Starters
- Variable Frequency Drive
- DC Motor Control

INDUSTRIAL POWER ELECTRONICS
EL-ELEC-LV3

- Oscilloscope
- Digital Multimeter
- Hand Held Digital Oscilloscope
- DC Power Supplies
- Single-Phase & Three-Phase Power Supplies
- Thyristor Electric Motor Drives
- Electronic Timers
- Stepper Motor Drives
- Servo Motor Drives

MECHANICAL SYSTEM LEVEL 1
EL-MB-LV1

- Basic Machines
- Machine Statics & Dynamics
- Machine Shafts & Keys
- Bearings

MECHANICAL SYSTEM LEVEL 2
EL-MB-LV2

- Belt Drives
- Chain Drives
- Machine Shafts & Couplings

MECHANICAL SYSTEM LEVEL 3
EL-MB-LV3

- Gear Drives
- Machine Speed Reducers
- Electric Brakes

ADVANCED MECHANICAL SYSTEMS

- Laser Alignment
- Vibration Analysis
- Bearing Maintenance
- Condition Based Monitoring for Industry 4.0

HYDRAULICS
EL-HYDRAULICS

- Fundamentals of Hydraulics
- Electro Hydraulics
- Advanced Hydraulics & Electro Hydraulics

PNEUMATICS
EL-PNEUMATICS

- Fundamentals of Pneumatics
- Advanced Pneumatics
- Electro Pneumatics

INDUSTRY 4.0 LEVEL 1
EL-INDUSTRY-4

- Introduction to IoT & Connectivity
- Introduction to Networking & Cybersecurity
- Advanced IIoT & Connectivity
- Advanced Cybersecurity

PLCs
EL-PLC

- PLC Technology 1
- PLC Technology 2
- PLC Technology 3
- PLC Technology 4

SMART SENSORS
EL-SMRT-SNSR

- Machine Vision & Quality Control 1
- Machine Vision & Quality Control 2
- Smart Devices for Industry 4.0

INDUSTRIAL ROBOTICS
EL-ROBOTICS

- Fundamentals of Robotics
- Advanced Robotics
- Robotics & Materials Handling 1
- Robotics & Materials Handling 2
- Automated Welding
- Robot Grippers
- Robotics, Automation, & Integration for Industry 4.0

INDUSTRY 4.0 LEVEL 2
EL-INDUSTRY-4

- Advanced Industry 4.0 Concepts
- Introduction to Big Data
- Software Technologies for Industry 4.0
- Advanced Data Science for Industry 4.0

MACHINING
EL-CNC

- CNC Milling
- CNC Turning
- CNC Routing
- CAM Turning with SpectraCAM
- CAM Milling with SpectrCAM
- CAD with SpectraCAD Engraver
- Introduction to 3D Printing
- Introduction to 3D Scanning
- Plastics Technology

INDUSTRY 4.0 LEVEL 3
EL-INDUSTRY-4

- Intro to Manufacturing Processes with RobotExpert
- Advanced Manufacturing Processes with RobotExpert
- The Industry 4.0 Ecosystem
- Industry 4.0 for Business

Capstone Projects

Industrial Maintenance 4.0
EL-EMMC-1600

System Installation, operation and troubleshooting includes:

- Maintenance Cell Assembly
- Electrical & Electrical Control
- Conveyor, Drives and Controls
- Part Manipulation
- Industrial Lighting
- Variable Frequency Drive
- DC Motor and Drive
- Networking & Communications
- PLC Control
- Sensors

SmartCart 4.0
EL-GPB-CART-140

Automation and Integration for Industry 4.0 includes:

- Robotics
- Automation
- PLC Control
- Storage
- Smart Sensors
- Machine Vision
- Materials Handling

SmartCIM4.0
EL-CIM-FMS

Computer Integrated Manufacturing for Industry 4.0 includes:

- Robotics
- Machining
- Automation
- PLC Control
- Storage
- Smart Sensors
- Machine Vision
- Materials Handling
- Networking & Communications
- Manufacturing Operations
- Quality Assurance
- MES

Industry Certifications

Micro Credentials	Yaskawa Robot Operator Yaskawa Robot Programmer Cognex Machine Vision Operator Siemens RobotExpert PLM Operator	YASKAWA SIEMENS COGNEX
NIMS ITM (Industrial Technology Maintenance)	Maintenance Operations Specialist Mechanical Systems Specialist Hydraulic Systems Specialist Pneumatic Systems Specialist Electrical Systems Specialist Electronic Control Systems Specialist	NIMS
NIMS Industry 4.0	Industry 4.0 Production Specialist	NIMS