X-Cal is one of three companies founded by Tim and Dede Brown in order to meet the growing need for technical and vocational training. X-Cal operates in New Mexico, Colorado, Utah, Idaho, Montana and Wyoming.

Through our network of manufacturing partners, we provide the most up-to-date curriculum resources, software, equipment, furniture, professional development and customer support available today, for a wide range of STEM and Career and Technical Education areas.

X-Cal exists to equip schools, colleges, universities and companies with technology enabled training solutions that empower learners to create a better life for themselves and their families while enabling American companies to increase their competitiveness in the global economy by providing solutions to train a highly-skilled workforce.

Solutions Center

This past spring, we opened the doors to the Solutions Center located in Katy, Texas. Our Solutions Center is a 14,000 square foot commercial building that is divided into abundant space for our offices, demonstration areas, and training rooms, as well as a 6,000 square foot warehouse.

The new building provides many structural upgrades which allow us to showcase the latest equipment available in our hands-on demonstration areas. Additionally, we added state-of-the-art training rooms and conference center.

Not only does the warehouse provide a demonstration area for our larger pieces of equipment, it allows us to keep an inventory of popular products, and spare parts to shorten the delivery cycle and minimize equipment downtime.

We would like to invite you to our new facility to give you a firsthand tour of our comprehensive solutions for CTE, Engineering, Robotics, Additive Manufacturing, Certifications, Industry 4.0, STEM, Medical Simulators and much more!

Contact your regional manager to find out more about the equipment available in the Solution Center or sign-up to get notifications on our upcoming events.
# Table of Contents

Certification Programs ........................................... 4  
MSSC, NIMS, Welding, Industry 4.0, Automotive Technology, Electronics, Information Technology, Renewable Energy/Energy Efficiency, Smarthome, 3D Printing

Industrial Skills Trainers ................................. 11  
Advance Manufacturing, Process Control, Industrial Maintenance, Mechatronics, Portable Trainers, Smart Factory, Industry 4.0, e-Learning, High School Learning Programs, Renewable Energy

3D Printers ........................................................ 20  
Additive Manufacturing, Stereolithography, FDM, PolyJet, Post Processing, Fume Extractors

Anatomy Models ........................................... 26  
Surgical Models, EMT Trainers, Veterinary Science

CNC & Robotics Training .............................. 28

Construction ............................................. 30  
Residential Wiring, HVAC/R

Information Technology .............................. 32  
Networking, Cyber Security

STEM .................................................... 33  
Robotics, Drones, Curriculum

Transportation & Logistics ............................ 35  
Automotive Technology, Collision Repair, Heavy Equipment, Maritime, Port Crane

Welding ...................................................... 39

Skill Boss  
Performance-Based Assessment & Hands-On Training  
Required by MSSC for CPT+ Certification Assessment

See page 13

See page 16
Amatrol's NIMS Industrial Technology Maintenance Certification (ITM)

NIMS, Lightweight Innovations for Tomorrow (LIFT) and Ivy Tech Community College are partnered to enhance and expand training to fill the largest number of open manufacturing jobs. The program is part of a comprehensive effort to prepare a new industrial technology maintenance workforce, which drives the performance and improvement of high-tech manufacturing, and has grown in demand by 118% from 2011 to 2015.

Focus on building high-quality training programs by:

- Rolling out the first-ever industry standards for educating and training the industrial technology maintenance workforce
- Training instructors from community colleges across the region
- Equipping a competent workforce with the knowledge, skills and credentials they need to enter into and advance in the field.

NIMS ITM Certifications are available in the following duty areas:

- Duty Area 1: Maintenance Operations
- Duty Area 2: Basic Mechanical
- Duty Area 3: Basic Hydraulic
- Duty Area 4: Basic Pneumatic
- Duty Area 5: Electrical
- Duty Area 6: Electronic Control
- Duty Area 7: Process Control
- Duty Area 8: Maintenance Welding
- Duty Area 9: Maintenance Piping

These stackable credentials enable students to learn and earn at the same time!

NIMS (National Institute for Metalworking Skills) endorses Amatrol’s Industrial Maintenance Certification Program. NIMS provides national standards for metalworking. Additional details on how to obtain a certification can be found at Amatrol.com or NIMS-Skills.org.

Smart Automation Certifications | Industry 4.0

SACA’s Smart Automation Certifications use a modular structure to enable them to fit a wide range of individual needs, industries, and educational environments.

SACA offers certifications in three categories: Associate, Specialist, & Professional. Each certification is stackable allowing individuals to start with one certification and add other certifications to customize their documented skills. Certifications are occupationally focused so they prepare individuals for specific occupations in the world of Industry 4.0.

Go to x-cal.us/cert for more information!
CNC Machine Operator skills are required for over 500,000 manufacturing jobs. A CNC machine operator requires expertise in running CNC machines but is not a machinist. Unlike most CNC training programs available today, Amatrol’s CNC Machine Operator Program has been designed in partnership with a large global manufacturer specifically for machine operators, streamlining and focusing on the skills these operators need.

Amatrol’s Turn-Key Program Includes:

- 24 self-paced learning units
- 132 skills, 80+ hours of learning
- Instructor’s guide with authentic skill assessments (practice for NIMS certification)
- OJT (On-The-Job-Training) guide
- NIMS exam registrations(s): Flexible Delivery - via the web or server-based in the classroom
- Skill tracking and reporting software available
- Both FANUC and Haas Controls

Rich Multimedia Featuring:

- Interactive Exercises
- Engaging graphics
- Vibrant 3-D Animations
- Extensive Videos
- Narration and Text
- Comprehensive Explanations

NIMS endorses Amatrol's CNC Machine Operator Program exclusively as the recommended preparation method for the NIMS CNC Machine Operator Certification. NIMS provides national standards for metalworking. Additional details on how to obtain a certification can be found at Amatrol.com or NIMS-Skills.org.
Manufacturing Skills Standards Council

*Overcoming the Skills Gap through Industrial Certifications*

The MSSC is the nation’s leading industry-led training, assessment and certification organization focused on the core technical competencies needed by the nation’s frontline production and material handling workers. The nationwide MSSC certifications, based upon industry-defined and federally-endorsed national standards, offer both entry-level and incumbent workers the opportunity to demonstrate that they have acquired the knowledge and skills increasingly needed in the technology-intensive advanced manufacturing and logistics jobs.

**MSSC has developed nationally portable certifications for this workforce:**

- **Certified Production Technician (CPT):** Addresses the core technical competencies of higher skilled production workers in all sectors of manufacturing. MSSC awards certificates to individuals who pass any of its *five Production Modules:* Safety, Quality Practices & Measurement, Manufacturing Processes & Production, Maintenance Awareness and Green Production and a full CPT Certification to those who pass all four core modules (Note: Green is not required for full-CPT certification.)

- **Certified Logistics Technician (CLT):** Addresses the core technical competencies of higher skilled, frontline material handling workers in all supply chain facilities: in factories, warehouses, distribution centers and transportation companies. MSSC awards the foundational-level Certified Logistics Associate (CLA) certificate and the mid-level CLT certification. CLA is a prerequisite for CLT.

- **Certified Forklift Technician (CFT):** MSSC and MHEDA have partnered to develop the CFT program which provides basic skills needed to maintain and repair systems for most forklift vehicles. CFT includes 55+ hours of instructor-led computer-based training.

CPT and CLT are the *only national industry certifications*, for both manufacturing and logistics, accredited under ISO 17024 (personnel certification) and endorsed by the National Association of Manufacturers.

**MSSC benefits to employers include:**

- A pipeline of skilled workers by embedding MSSC certification training into schools
- Decreased recruitment costs by providing job candidates with industry-recognized credentials
- Elimination of remedial training costs by providing well prepared workers
- A new ISO standard in certificates companies can use as a common practice throughout their global operations
- Increased ROI for training by targeting it against the gaps identified by the MSSC Diagnostic Tool
- An aid to attracting, motivating and retaining qualified employees

Go to [x-cal.us/mssc](http://x-cal.us/mssc) for more information!
Amatrol’s Certified Production Technician Program

The Certified Production Technician (CPT) program enables students to build foundational skills, work effectively with others, identify and solve problems, and continue to acquire the necessary skills to succeed in their work roles.

The program’s interactive multimedia curriculum uses a competency-based instructional design that teaches Manufacturing Skill Standards Council’s (MSSC) nationally recognized standards. An engaging combination of video, text, audio, 3D animation and interactive activities, the CPT curriculum captures the attention of the student and keeps them engaged through the entire learning process – igniting their passion for achievement.

The MSSC CPT Program provides training and credentialing in the foundational areas of safety, quality, manufacturing processes and maintenance. In addition to technical skills, CPT addresses cross-functional skills, such as communication, teamwork, customer awareness and workplace conduct. CPT is the foundation of the NAM-Endorsed Skills Certification System, making it a truly portable credential.

Amatrol Certified Production Program
Flexible Turn-key program!

Amatrol’s turn-key program includes:

- Four Certification Areas
  - Safety
  - Quality Practices & Measurement
  - Manufacturing Processes & Production
  - Maintenance Awareness
- 224 Industry/Career Skills
- 140+ Hours of Learning
- 39 Self-Paced Learning Units
- 25 Seats per Production Module

The federal National Skill Standards Board formally recognized MSSC as the standards and certification “Voluntary Partnership” for all manufacturing sectors in 1998 and officially endorsed MSSC’s national standards in 2001. MSSC has since been used by the U.S. Departments of Labor, Education, Defense and Veterans Affairs, as well as Job Corps and both Federal and State Prison Systems. MSSC is a Founding Partner in the National Association of Manufacturers (NAM)-endorsed Skills Certification System, which has endorsed both CPT and CLT.
National Certifications for Robotics and Advanced Automation Manufacturing

**FANUC Certified Robot Operator Certifications**

Students with this level have a basic understanding of robot operations and programming, material handling and its components, and introduction to Roboguide simulation software. These certification programs are focused on the core Robot Operator skills needed by entry level or incumbent workers.

**FCR-O1 FANUC Certified Robot Operator-1**
Written assessment for an entry level position as a robotics associate in manufacturing. The assessment exams allow the candidate to demonstrate their knowledge in: Robot operations, frame setup, writing, modifying and executing basic motion programs, program offsets, backups and restorations, creating and modifying simulations.

**FCR-O2 FANUC Certified Robot Operator-2**
Performance assessment for an entry level position as a robotics associate in manufacturing. The performance exams allow the candidate to demonstrate their hands-on skills in: Robot operations, frame setup, writing, modifying and executing basic motion programs, program offsets, backups and restorations, creating and modifying simulations.

**FANUC Certified Robot Technician Certifications**

Students with this level have a more advanced understanding of robot operations and programming, material handling techniques, technical system components, and 2D integrated robot vision guidance and part inspection process, as well as Roboguide simulation software skills required for Robotic Technicians to enter automation manufacturing, production operations, and robotic systems engineering.

**FCR-T1 FANUC Certified Robot Technician-1**
Written assessment for technical level position as a robotics engineering associate in manufacturing. The assessment exams allow the candidate to demonstrate their knowledge in: Single axis mastering on all six axis, how to create and execute a pick and place program for load and unload applications, and how to set up and program 2D Integrated Vision for part offset and inspection.

**FCR-T2 FANUC Certified Robot Technician-2**
Performance assessment for technical level position as a robotics engineering associate in manufacturing. The assessment exams allow the candidate to demonstrate their skills in: Single axis mastering on all six axis, how to create and execute a pick and place program for load and unload applications, and how to set up and program 2D Integrated Vision for part offset and inspection.

**Welding / AWS SENSE Program**

A comprehensive set of minimum Standards and Guidelines for Welding Education programs. Schools can incorporate SENSE into their own curriculum in order to help attain Perkins funding as well as to help ensure an education that is consistent with other SENSE schools across the nation. This program is fully supported by the American Welding Society.
CERT Education

**FANUC CERT Program**

*Robot Cells Made for the Classroom*

Industrial robotics training in the classroom can safely be achieved through the CERT program. FANUC America provides the necessary training to the instructor as well as a curriculum to introduce students to robot applications including: integrated vision systems (iRVision), programming a logic controller, and using ROBOGUIDE simulation software. To accompany the CERT program, an eligible school can purchase a new innovative educational tooling package. With this package, students will utilize the same robots and software that are used in industry. Schools can use the new package to integrate robot training into their programs and initiatives.

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**CNC Training Solutions**

FANUC America is partnering with educational/academic institutions across the country to develop programs, curriculum, software and teaching tools that provide students with the knowledge and skills that employers need. The goal of this program is to make students more marketable and valuable in the workplace by having the knowledge and skills needed to set up and run the most advanced CNC systems.

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**ROBODRILL and Education**

FANUC ROBODRILL Machines are high-speed, highly precise and highly reliable. The high-speed cutting makes it very easy to quickly machine precision parts with high accuracy. The high reliability and long life of ROBODRILL machines are guaranteed due to its robust and uncomplicated construction. Because of its versatility, the FANUC ROBODRILL can be used in many different fields. The machine has been successfully used for high volume production in a wide range of sectors, including:

- automotive
- electronics
- medical tools
- implants
- watches and jewelry
- mold and tool making

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We’ll help you find the best FANUC CERT product to help fit your needs.
Industrial Certifications & Endorsements

Smart Home Technologies

*Residential Electronics Systems Integrator (RESI)*

Install and interconnect residential electronic communications, computer, control and entertainment equipment. Our expert training systems are the perfect addition to your construction or electronics program.

**Smart Home Certifications**

Electronic Technicians Association (ETA)

- ETA Residential Electronics Systems Integrator
  - Basic Residential Electronics Systems Integrator
- ETA Audio-Video Endorsement
  - RESI Audio-Video Endorsement
- ETA Security-Surveillance Endorsement
  - RESI Security-Surveillance Endorsement
- ETA Data Cabling Installer
  - Low Voltage Wiring Certification Program
  - MECP Basic Installer Certification Program
- ETA Certified Alarm Security Technician
  - Security-Surveillance Certification Program
- ETA Fiber Optic Installer
  - Fiber Optic Installer Certification Program
- Consumer Electronics Association: Mobile Electronics Certified Professional Certification

**IT Certifications**

Microsoft Networking Fundamentals

- MTA Exam 98-366
  - Introduction to Networking
- Microsoft Security Fundamentals
  - MTA Exam 98-367
  - Introduction to Security
  - Cyber Security Essentials
- CompTIA A+ Certification
  - Maintaining and Repairing PC’s
- CompTIA Network+ Certification
  - Network+ Certification

ISACA Security Fundamentals Certificate

- Cyber Security Essentials
- CompTIA Healthcare IT Technician
  - Cyber Security Advanced Healthcare IT
- CompTIA Security+
  - Cyber Security Essentials
- Certified Ethical Hacker
  - Hacking, Cracking and Internet Jacking (Advanced hacking)
- CompTIA Advanced Security Practitioner (CASP)
  - Advanced Enterprise Security

**Renewable Energy/Energy Efficiency Certifications**

- NABCEP PV Installer, Entry Level
  - Solar/PV Installer
- ETA Solar/PV Installer
  - Solar/PV Installer Training Guide
- ETA Small Wind Installer
  - Wind Turbine Technician Training Guide
- RESNET Rater/Auditor
  - Energy Auditing
Industrial Skills Trainers: **Advanced Manufacturing**

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**Electrical**
- AC/DC Electrical
- Motor Controls & VFD’s
- Power Distribution & Wiring

**Mechanical**
- Mechanical Drives
- Vibration Analysis
- Laser Alignment

**Fluid Power**
- Basic Hydraulics & Pneumatics
- Advanced Fluid Power and Troubleshooting

**Electronics**
- AC/DC Drives
- Power & Control Systems
- Motion Control
- Programmable Logic Controllers (PLC)

**Automation**
- Robotics
- PLC’s
- Mechatronics

**Smart Factory**
- Automation
- Electrical
- Electronics
- Fluid Power
- Machining
- Process Control

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Many of Amatrol’s learning systems use FaultPro, the industry’s only electronic troubleshooting system, to offer hands-on troubleshooting skills like in-circuit component testing methods and universal digital controller troubleshooting. troubleshooting training.
Industrial Maintenance & Mechatronics

Amatrol delivers total learning solutions for advanced manufacturing!

Amatrol provides total learning solutions for the ever growing critical problem of skill shortages in manufacturing. You will find that their many learning systems cover the full range of needed skills – from basics to advances across pretty much every technology used in industry today. Their focus is job ready and they provide the tools you need to make that happen.

Key Features:

- Highly demanded industry skills: hands-on, job-ready
- Individualized self-paced or group learning
- Extensive curriculum ranging from basic through advanced
- Authentic industrial troubleshooting
- Durable, industrial equipment
- Superior multimedia interactivity
- eAssessment to accelerate learning and improve effectiveness
- Learning anywhere, anytime – 24 x 7
- Computer-based training with Amatrol’s eAssessment

Industry Skill Areas:

- Foundation Skills
- Problem Solving & Analysis
- Troubleshooting
- Operation
- Turning & Adjustment
- Installation
- Maintenance & Repair
- Application

Multimedia

Interactive multimedia with vivid 3D graphics designed to teach as well as engage, check for understanding and provide feedback. Frequently includes virtual skills that allow students to perform the same activities in simulation they would with hands-on equipment.

Smart Factory Mechatronics Training System

An eight-station automated manufacturing line that assembles a functional, two-way pneumatic valve.

This system utilizes either a FANUC LR Mate robot or an Amatrol Pegasus robot, iGear Squeaks software for Smart Factory communication, Allen-Bradley and/or Siemens PLCs, and a ninth cart that houses systems for Ethernet (87-EN), Wireless Communication (87-WL), and Network Security (87-NS) training.

Each of the main stations features a smart sensor or component for Smart Communication, including pneumatic/vacuum, ultrasonic, photoeye, stack light, electrical current, and analog pressure.
Industrial Skills Trainers: Portable Trainers

“Real” Portable Learning Systems

Learning Systems Designed as Portable Systems
Set up training in a classroom, shop floor, or practically anywhere. Portable trainers fit easily in a car to transport to another facility. Avoid the logistical hassles of trailer-based systems. Quickly change over a classroom from one course to another. Portable systems store in a closet and set up in minutes!

Comprehensive Training
No Sacrifice for Portability

• Same knowledge and hands-on skill training as larger systems
• Industrial components ensure relevant skill transfer
• Ability to connect with other learning systems
• FaultPro - Electronic Fault Insertion Available on many models

Portable Learning Systems:
• Process Control
• Mechanical
• AC / DC Electrical
• Electrical Relay Control
• Pneumatics
• Precision Gauging
• Electronic Sensors
• PLC - Allen-Bradley
• PLC - Siemens S7-1200
• Motor Control
• AC Motor Drives

Portable Systems with Electronic Fault Insertion:
• Pneumatic Troubleshooting
• PLC - Allen Bradley
• PLC - Siemens
• Relay Control
• Motor Control
• AC Motor
• Drives

Portable Hydraulics Training
Skill-Building for Basic Hydraulics Applications
• Gain skills by studying topics like basic hydraulic circuits, pressure control circuits, hydraulic schematics, and sequence valves
• Includes gauges, manifolds, cylinders, valves, flow meter, and hydraulic motor
• Includes schematic symbols for each component, creating the ability to read and draw their own hydraulic schematics

Go to x-cal.us/portable for more information!
Industrial Skills Trainers: \textit{Smart Factory}

Smart Factory / Industry 4.0

Amatrol’s “Smart Factory” is a fully connected and flexible manufacturing system that connects its physical systems, operational information, and human assets to control manufacturing, maintenance, inventory, and supply chain operations. Amatrol’s in-depth curriculum teaches all aspects of smart factory maintenance and operation in a self-directed, interactive format.

\textbf{Smart Product ID}

Amatrol’s Smart Factory incorporates smart product identification devices, such as vision systems and bar code readers, which trigger “intelligent” actions including parts tracking, production history, sorting, part accept/reject, and inventory control.

\textbf{Smart Sensors}

Amatrol utilizes multiple smart devices on the Smart Factory that communicate via Ethernet and I/O Link protocol providing flexible manufacturing, predictive maintenance, and data analytics capabilities.

\textbf{Network Communications}

Amatrol’s communication system connects students with a fully functional production system using industrial protocols, for real-time control, program transfer, data collection, and changing programs on the fly.

\textbf{Network Security}

Amatrol’s network security system teaches how to keep data safe and securely extend operational data to suppliers and customers. Communications security protects the smart factory from unauthorized outside access and provides secure data communications between the plant-wide network and the Internet.

\textbf{Smart Production}

Amatrol’s Smart Production software teaches how smart factories perform customized (personalized) manufacturing and make data and data analytics available via the Internet to improve system performance. Amatrol’s Smart Factory assembles a pneumatic valve in various configurations on orders entered. The valve can be ordered with a plastic or metal valve body and either a 3-way or 4-way spool.

\textbf{Smart Maintenance}

Smart Maintenance software utilizes smart device information to automatically trigger maintenance operations. Amatrol’s Smart Factory uses industry standard software to connect users directly to the automated system and each other to create a real-world environment where maintenance team members can collaborate to resolve issues quickly and effectively.
Training Systems for Industrial Process Control Education

Process control is a versatile and vital part of major industries like: power generation; petrochemicals; food processing and bottling; chemical manufacturing; bio-technology; pharmaceuticals; and refineries.

Because of the wide application of this key component, Amatrol has developed the largest and most in-depth offering of industrial process control training options available. Amatrol offers four major process control systems, each covering a different process control application: level and flow, temperature, analytical, and pressure. Amatrol also offers a variety of training options for related process control applications such as HART communication protocol, Foundation Fieldbus, and SCADA. This in-depth offering of process control training solutions fit within various Amatrol programs.

Level / Flow Process Control and Level / Flow Process Control Troubleshooting

Level / Flow Process Control Learning System (T5552): teaches two of the most common types of process control systems, flow and liquid level, and the basic concepts.

Level / Flow System Expansions

Smart Flow Transmitter Learning System (T5552-F1): offers expansions like: pitot tube flow transducer, Venturi flow transducer, and orifice plate flow transducer.

Ultrasonic Liquid Level Learning System (T5552-L1): covers major topics like ultrasonic level measurements, ultrasonic level calibration, and level controls.

Foundation Fieldbus Process Control 1 Learning System (T5552-FF1): covers a popular industrial method for calibrating and troubleshooting valves and transmitters connected to a network.

HART Process Control 1 Learning System (T5552-H1): teaches one of the most commonly used communication protocols, HART (Highway Addressable Remote Transducer).

Visualization Process Control 1 Learning System (T5552-S1): covers SCADA (Supervisory Control and Data Acquisition) that allows operators, technicians, and engineers to monitor and control process applications using sensors networked to equipment on the plant floor.

Temperature Process Control

Temperature Process Control Learning System (T5553): allows learners to study and practice calibrating, adjusting, installing, operating, and tuning thermal process control systems in industrial applications.

Analytical Process Control

Analytical Process Control Learning System (T5554): covers major topics and skills involved with controlling and modifying the chemical properties of a substance.

Pressure Process Control

Pressure Process Control Learning System (T5555): offers the ability to control liquid level and tank pressure simultaneously using a human machine interface (HMI), programmable automation controller (PAC), and variable frequency drive (VFD).

Connect All Four Systems to Create an Entire Process Plant!
Skill Boss
Performance-Based Assessment & Hands-On Training

Skill Boss provides the tool you need to teach or evaluate an individual’s skills as they install, adjust, & troubleshoot components on this fully functional mechatronics system, applicable to both discrete parts & process manufacturing.

Designed to meet MSSC standards, Skill Boss is a hands-on skill training & assessment system that integrates seamlessly into any manufacturing program and is required for CPT Plus certification.

Renewable Energy
Green Energy Technology (GET)
This program starts with many traditional technical disciplines like electric motor control, wiring, rotation machines, hydraulics, mechanical fabrication, print reading, etc. and moves into more specialized skills in wind turbine and solar thermal concepts and installation.

Solar Technology
Solar Technicians require specialized job skills, combining electrical and plumbing skills with solar technology savvy. Successful Solar Technicians incorporate many traditional technical disciplines like electric motor control, wiring, rotating machines, piping, pumps, power distribution, etc. along with more specialized skills in solar technologies like solar installation, PV and thermal system troubleshooting, and specialized solar piping and pumps.

This program serves as a valuable career resource for solar energy technicians, solar engineers, solar installation professionals, solar consultants, and solar installers.

Wind Turbine Technology

The job skills required incorporate many traditional technical disciplines like electric motor control, wiring, rotating machines, hydraulics, mechanical drives, networks, etc., along with more specialized skills in wind turbine nacelles, hubs, and turbine generator control units.

Amatrol’s Wind Turbine Technology program prepares students to assess and remedy the many challenges they will face. Troubleshooting and problem solving across all the technologies required for Wind Turbine Technicians are keystones for Amatrol’s Wind Turbine Technology program.

Amatrol’s Wind Turbine Technology program is a valuable for wind turbine technicians, wind turbine engineers, wind techs, and wind turbine site supervisors.
Amatrol e-Learning
Interactive Technical Skill Development, Hands-On Virtual Simulators!

Amatrol’s e-Learning program meets the challenge for flexible technical training by offering superb technical content depth as well as breadth, strong interactivity for skill development, and excellent assessment and student tracking through an intuitive, easy-to-use web portal.

With 24/7 access, Amatrol’s e-Learning program creates easy access to educational opportunities for technical skill development previously restricted to the classroom. The material is self-paced, making it ideal for individual use, traditional class settings, or a blended approach. Amatrol’s proven curriculum is problem-solving oriented and teaches technical skills in a wide range of industrially-relevant technologies.

**e-Learning Training Topics**
- Quality • Robotics • Mechanical • PLCs • Electrical • Fluid Power • Machining • Plastics

**Amatrol e-Assessment**
Identify Skill Gaps for More Efficient Training

Amatrol’s eAssessment revolutionizes technical assessment and training by individually determining a learner’s skill level in specific areas. This assessment prevents training overlap, which dramatically improves training effectiveness and technical training efficiency, as well as reduces training cost and time investment.

**Targeted Training to Fill the Skill Gaps!**
With the implementation of new technology like Smart Factory components, the manufacturing world is evolving quickly. Employees must engage in continuous advanced manufacturing training to keep from falling behind. This training must be cost-effective and efficient.

eAssessment offers the power to train each employee based on their skill gaps! Assessing your employee’s technical knowledge provides the base you need to effectively target certain advanced manufacturing skills while training each employee without wasting time and money on skills and technical areas that they’ve already mastered.

**Assessments Available In:**
- Automation • Electrical • Fluid Power • Green Energy
- Industry Fundamentals • Lean Manufacturing
- Machining • Manufacturing Processes • Materials
- Measurement & Gauging • Mechanical
- Prints & Drawings • Process Control • Quality
- Safety • Structural Engineering • Surveying
- Thermal • Workplace Effectiveness
Industrial Skills Trainers

We are committed to provide educational or industrial tools aimed at promoting a true “hands-on” teaching concept. Cut-Away trainers have sections of the part cut out in order to expose the internal components. The sectioned parts are painted with different colors to differentiate the various components. The variety of cutaways, demonstrators and models we offer were designed through a client-driven needs analysis program.

**Cut-Away Valves**

These cut-away training valves are “cut-a-way” so you can see and identify the internal components. The Cut-Away Valves may be taken apart and reassembled for training purposes.

Common valves found in oil refineries and chemical plants:

- Cut-Away Ball Valves
- Cut-Away Plug Valves
- Cut-Away Gate Valves
- Cut-Away Globe Valves
- Cut-Away Check Valves
- Cut-Away Needle Valves
- Cut-Away Butterfly Valves
- Cut-Away Safety Valves
- Cut-Away Pressure Relief Valves

**Split Case Cut-Away**

Cut-a-way or split case industrial trainers for the Oil and Gas Industry

**Acrylic Working Demonstrators**

“See through” acrylic training models: pumps, separators, boilers, and more!

**Mechanical & Maintenance Trainers**

Designed for maintenance and operations personnel in the Oil and Gas industry.

**Acrylic Static Models**

Transparent acrylic training tools students dismantle to see the components parts, how they are assembled, how they look and gasket positioning.

**Process Trainers**

“Hands on” training units for process operators and maintenance technicians.

**ELECTRICAL & ELECTRONICS**

Comprehensive training systems that offer performance based skills training in electrical and electronics.
High School Project/Work-Based Learning
Skill-based learning programs that attract & retain learners

Amatrol’s high school programs are designed to engage students who demand a high degree of interactivity to keep them interested and learning. All our high school programs allow students to learn at their own pace, and articulate to colleges for up to 18 credit hours.

Amatrol’s Pre-Engineering and Manufacturing programs are a great way to get high school students interested in exciting and rewarding careers. Hands-on experience in a wide range of engineering technologies using industrial quality equipment and software prepares them for success in college and beyond.

Amatrol’s High School programs use a unique blend of project-based team learning combined with a rotational individualized learning format for technical skills development. Amatrol offers both traditional equipment based labs as well as virtual labs. While designed for self-paced learning, Amatrol’s learning programs are equally effective in traditional classroom settings.

**Learning Programs:**
- Smart Factory/Industry 4.0
- Advanced Manufacturing Fundamentals
- Certified Production Technician
- Construction Technology
- Green Technology
- Pre-Engineering
- Project-Based Learning
- STEM
- Student Reference Guides
- Technology Education
- Virtual Labs

**Industry 4.0 Fundamentals**
Complete four-semester program

Designed to attract students who may never have considered manufacturing as a course of study or career focus and includes the opportunity for students to earn an industry certification.

**Advanced Manufacturing Fundamentals**
Complete four-semester program

Designed to attract students who are interested in knowing how things work by focusing on design and manufacturing processes with hands-on activities to drive learning. Includes the opportunity for students to earn industry certification, CPT and CPT+.
PolyJet 3D Printers give you an amazing range of material options, and can even let you combine several materials in one 3D printed model. Do things you never thought possible with 3D printing, like simulated overmolding, flexible, multi-colored prototypes, ergonomic tooling, or simultaneous printing of diverse parts.

Benefits of PolyJet 3D Printing
PolyJet technology offers exceptional detail, surface smoothness and precision.

- Create smooth, detailed prototypes that convey final-product aesthetics.
- Produce accurate molds, jigs, fixtures and other manufacturing tools.
- Achieve complex shapes, intricate details and delicate features.
- Incorporate the widest variety of colors and materials into a single model for unbeatable efficiency.

Stratasys J735 and J750
Bring unrivaled aesthetics to your brightest ideas and boldest ambitions with true, full-color capability, texture mapping and color gradients.

- Pantone Matching System (PMS) Colors available for the first time in a 3D printing solution.
- Color matching to Pantone Colors in a single click from the GrabCAD Print software.
- Multiple material selections means you can load up to six materials at once.
- Double the number of print nozzles in print heads means you can produce ultra-smooth surfaces and fine details.

3D Printing in Medicine
We offer 3D printing solutions for educators to develop clinically relevant, high-impact training models from real human anatomy. These models reduce limitations by allowing universities to train physicians in any environment, and closely simulate real human tissue properties without using highly processed cadavers and animals.
Higher education. Higher demands.

Meet industry’s 3D printer.
The Stratasys F120.

FDM Technology uses the same tried and tested thermoplastics found in traditional manufacturing processes. For applications that demand tight tolerances, toughness and environmental stability - or specialized properties like electrostatic dissipation, translucence, biocompatibility, VO flammability or FST ratings - there’s an FDM thermoplastic that can deliver.

Design Series
Make prototyping smarter & easier
The award winning Stratasys F123 Series is easy to operate and maintain, whatever your level of experience.

Production Series
Large-capacity FDM printers
Offers the capacity and material variety to meet the demands of the manufacturing environment.

Fortus 380MC Carbon Fiber Edition
Strong, Light-Weight
Build high-performance prototypes with FDM that stand up to rigorous testing. Nylon 12CF, a carbon-fiber reinforced thermoplastic, meets the demanding needs of the production environment.
Benefits

- Component weight reduction
- Rapid design iterations
- Bespoke or customized items
- Multiple parts consolidation
- Reduce tooling costs
- Build complex geometries
- Increased design freedom

RenAM 500Q
Quad Laser Additive Manufacturing System for High Productivity

RenAM 500Q is Renishaw’s multi-laser AM system. It features four high-power 500 W lasers, each able to access the whole powder bed surface simultaneously. RenAM 500Q achieves significantly higher build rates, vastly improving productivity and lowering cost per part. The RenAM 500Q features automated powder and waste handling systems that enable consistent process quality, reduce operator intervention time and ensure high standards of system safety.

RenAM 500M

RenAM 500M has a higher level of automation compared to the more flexible AM250 and AM 400 platforms. Powder sieving and recirculation are all carried out within the compact system automatically, reducing the need for manual handling and exposure to materials. This provides increased safety and sustained quality of the metal powders.

Reduced Build Volume (RBV)

The RBV is designed for users to easily change between materials for the purpose of materials development and experimentation. All Renishaw additive manufacturing (AM) systems feature open parameter editing with over 142 parameters. RBV enables rapid real time testing of the parameters, speeding up material development iterations.

QuantAM File Preparation Software

Renishaw QuantAM is a dedicated file preparation software tool for Renishaw additive manufacturing (AM) systems. With an intuitive workflow and easy navigation QuantAM accepts CAD exports in the form of STL data and allows you to prepare your model for the AM process.

Visit x-cal.us/renishaw for more information.
3D Printers: Desktop Metal

Studio System+

Affordable desktop metal 3D printing designed for engineers.
The Studio System is a three-part solution that automates metal 3D printing. Tightly integrated through Desktop Metal’s cloud-based software, it delivers a seamless workflow for printing complex metal parts in-house—from digital file to sintered part.

Safe to Use
We eliminated lasers and powders to make the Studio system safe for any facility. Unlike other systems, there are no special facilities or 3rd party equipment required—just power and an Internet connection.

Quick Material Changes
The Studio printer was designed with safe-to-handle, swappable media cartridges and quick release print heads for seamless material changes.

How it Works
The furnace combines SiC heating elements with high-powered microwaves to sinter printed parts after primary binder is removed.

Cloud-connected, the furnace has temperature profiles that are tuned to every build and material. It uniformly heats parts to just below their melting point, removing binder and fusing metal particles to form fully dense parts without the residual stresses introduced in laser-based systems.

Printer
Unlike laser-based systems that selectively melt metal powder, the Studio+ extrudes bound metal rods—similar to how a plastic Fused Deposition Modeling (FDM) printer works. This eliminates the safety requirements associated with metal 3D printing while opening up new alloys and enabling new features.

Build envelope: 12 x 8 x 8 in
Max build rate: 1 in³/hr
Min layer height: 50 µm

Debinder
The debinder prepares green parts for sintering by dissolving primary binder. With a low emission design, it requires no external ventilation and is safe for an office environment. Automatic fluid distillation and recycling means there is no need to refill between each cycle.

Fluid vol: 4.6 gal max
Vapor management:
No external ventilation required
Footprint: 40 x 29 x 23 in

Furnace
Fully-automated and sized to fit through an office door, the furnace delivers industrial-strength sintering in an office-friendly package. Built-in temperature profiles tuned to every build and material ensure uniform heating and cooling without the residual stresses introduced in laser-based systems.

Gas: (2) 900L onboard canisters
External gas connectors
Peak temp: 1400 °C
Footprint: h 64 x w 54 x d 30 in

Fabricate™ | A software-controlled workflow
Fabricate™ software automates even the most challenging aspects of the fabrication process. It auto-generates supports for easy removal and creates custom build plans that are tuned to the geometry and material for every part in the job—making it easy to produce high-quality metal parts without custom tooling or a dedicated operator.
3D Scanning

Artec 3D scanners
Fast. Smart. Vital

Streamlining engineering, industrial manufacturing, healthcare, science and education, with high precision, easy-to-use 3D technology.

Visit x-cal.us/3d-scanners for more information.

Professional 3D Scanners
Our portable 3D scanners are engineered to easily be used by both experienced and first-time users, with expert guidance available during every stage of capture and post-processing. Advanced tracking ensures the best data capture possible and eliminates the need for using targets, which is a great time saver.

Artec Eva Lite
The most affordable hand-held 3D scanner for professional results. A good option for medical applications and creating customized healthcare solutions.

- Highly-accurate results
- Light, portable and safe to use
- Geometry only tracking and data capture

Artec Space Spider
High precision, portable metrological 3D scanning solution based on blue-light technology, perfect for capturing small objects with intricate details, such as a cylinder head, coins or a human ear.

- Up to 0.1 mm 3D resolution and up to 0.05 mm 3D accuracy
- Fast capturing speed and no need for targets

Artec Leo
Our fastest professional hand-held 3D scanner yet. Encompassing the latest technologies in data capture, transfer and processing, this untethered 3D solution will revolutionize your workflow.

- Real time on-screen 3D model projection and processing
- Wireless technology with an inbuilt touch screen and battery
3D Printers: Post Processing & Fume Extraction

PostProcess Technologies is revolutionizing the way manufacturers scale. Introducing the world’s first and only automated support removal and surface finishing for 3D printed parts.

Surface Finishing
Rough unfinished surfaces on 3D printed parts show build lines and the raw nature of the build process. The method of hand finishing is expensive, inconsistent, and does not scale when production runs are more than a few. PostProcess automates surface finishing for additive manufacturing with our unique, patent-pending technology-based solutions integrating hardware with proprietary software and chemistry.

Support Removal
In additive manufacturing, parts coming off the printer require additional steps to be finished. They are typically encased in structural supports – supports that are required for the unique geometries 3D printing enables. At PostProcess Technologies, our cutting-edge solutions automate support removal using patent-pending software and exclusive chemistry technologies. Our proprietary process reliably removes support materials from all 3D printed parts while reducing cycle time and increasing productivity.

Unparalleled Consistency • Increased Throughput • Greater Productivity

BOFA offers a wide range of fume extraction systems for the Laser, Mechanical Engineering, Electronics, Printing, 3D Printing, Dental, Pharmaceutical and Beauty applications.

BOFA extractor systems
There are a variety of BOFA fume extraction systems available. If you need any guidance in which fume extractor to choose, please contact us and we will gladly point you in the right direction.

BOFA service and filters
BOFA offers support and service for LEV (Local Exhaust Ventilation) testing to ensure compliance with the latest Health and Safety regulations and are committed to providing reliable, safe, simple to use, cost effective systems that meet and often exceed health and safety legislation worldwide.

A Cleaner, Healthier, Working Environment
BOFA is the world leader in laser fume extraction equipment and have unrivaled expertise in the development and production of the latest fume extraction technology solutions, creating units for every industry and application.
Anatomy Trainers

**Synthetic Bodies**

This line ranges from educational models for anatomical reference to advanced surgical simulators which breathe, bleed and react like live patients. Our synthetic humans are tailored to meet a wide range of needs and can be customized with variety of pathologies and injuries.

**SynDaver Anatomy Model**: an education-grade synthetic human cadaver complete with all bones, joints, muscles, organs and tendons.

**SynDaver Musculoskeletal Model** includes all of the major skeletal and muscular structures present in typical human anatomy. It is an ideal alternative to human cadavers in basic anatomy classes. The tissues better represent live tissue than the dead tissue of a cadaver and can last virtually forever with proper maintenance.

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**Anatomy Arm**

SynAtomy anatomical models are manufactured from simplified versions of the synthetic human skeletal, muscle, vasculature, nerves, tendon, and fasciae. These education-grade skinless models include bones, fully articulating joints, muscles, tendons and protective storage case.

**SynAtomy Wearable Airway Trainers**

A highly lifelike medical training simulator designed to teach users interested in developing skills associated with tube thoracostomy placement.

*Includes chest rise and fall.*

**SynDaver Surgical Model**

The most elaborate full-body surgical simulator ever devised, featuring complete and functional musculoskeletal, cardiovascular, respiratory, gastrointestinal, endocrine and nervous systems based on CT, MRI and ultrasound images of actual patients.

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**SynAtomy Task Trainers Available:**

- Wearable Simulators
- Basic Suturing Skills
- Anastomosis Skills
- Airway Trainers
- Vascular Trainers
- Suturing Skills
- Ultrasound Trainers
- Obstetrics & Gynecology
- Pumps & Accessories
Anatomy Trainers

Organ Models

SynDaver organ models are by far the most realistic synthetic organs of their type available anywhere in the world. The structural design is based on an amalgam of CT and MRI images from actual patients and the synthetic tissues employed in construction have been validated against the mechanical, physicochemical, thermal and dielectric properties of living tissue.

Available Models:

- Esophagus
- Gall Bladder
- Kidney
- Large Intestine
- Liver
- Lungs
- Pancreas
- Penis
- Prostate
- Small Intestine
- Spleen
- Stomach
- Trachea
- Urinary Bladder
- Uterus

*Pathology units available.

Veterinary Models

SynDaver Surgical Canine

The SynDaver Synthetic Canine is a futuristic animal model designed to replace live animals and animal cadavers in veterinary surgical training. Based on 20+ years of SynDaver research, this model is made from water, fiber and salt.

She is a life saver, but she is not alive. She breathes and bleeds just like a real dog. She has individual muscles, bones, and organs – and can be operated on repeatedly without risking a live animal.

CopyCat Feline Anatomy Model

The Syndaver CopyCat® pairs SynTissue® organs with a silicone chassis and is intended to replace the use of cat cadavers in middle and high school dissection (non-biohazard and ethically sound). Its replaceable SynTissue® organs extend the useful life of this model indefinitely.

"I see this type of technology being revolutionary, in the fact that it will replace live animal models. Therefore you will get away from euthanizing animals needlessly."

Congressman Ted Yoho, DVM. Representative of Florida’s 3rd Congressional District
FANUC’s CNC Certified Education Training Program

With over 2.4 million systems installed, FANUC is the undeniable global leader in CNC controls. They provide their customers with the most innovative, reliable and high performance products, backed by world-class service and support.

FANUC realizes it takes qualified machinists, programmers, and operators to maximize productivity. To meet this need, FANUC has developed the most robust CNC certified education training program in the industry. If you want to train students to be productive employees right out of the gate, upgrade your educational programs with FANUC Certified Education Training.

FANUC CNC Certification Cart

Tabletop CNC certification carts are portable machines with a FANUC CNC, so students can practice machine set up and operation, and bring their programs into reality by making parts. The certification carts can be easily moved since they fit through a standard doorway and use a standard wall outlet for power.

Carts are available in turning (lathe) configuration or machining (mill) configuration with optional tooling packages that correspond with the lab exercises in the FANUC education curriculum.

FANUC’S ROBODRILL

The versatile FANUC ROBODRILL can be used in many different fields. The high reliability and the long life of the ROBODRILL are guaranteed due to the robust and uncomplicated construction of the machine.

Due to the high speed cutting with FANUC 31i-B series of controls it is very easy to quickly machine precision parts with high accuracy. Because of the stiff machine construction, the ROBODRILL provides efficient and accurate machining operations like face milling, end milling and drilling.

The 10.4” screen, quick screen and the full keyboard make it possible to input data with minimal time and effort. An additional standard PCMCIA card slot is located next to the screen and makes it simple to use CF cards.

Acceleration and deceleration will be optimized as the control will read 30 blocks ahead in the AICCII mode. In this way the part can be machine extremely fast and precise.

Benefits of the ROBODRILL:
- Fast and reliable tool change mechanism
- Tool change time 1.6s chip to chip
- Revolving Turret with up to 21 tools
- Latest FANUC servo motor technology
- .004mm bi-directional repeatability

Introducing the New Standard for Speed, Precision and Productivity

FANUC’s new SCARA robots are ideal for high-speed, precision applications such as assembly, pick and place, testing/inspection and packaging processes.
Fanuc’s Robotics’ Certified Education Robot Training or (CERT) program certifies instructors at high schools, trade schools, community colleges and other universities to train their students to program Fanuc robots through on-line and hands-on training courses using actual Fanuc Industrial Robots. This creates a tremendous opportunity for schools to expand their training to include a certification on a real, industrial robot from the number one robot manufacturer in the world!

**CERT Program Features and Options**

FANUC’s CERT carts are compact, portable, self-contained educational robotic labs used to train students how to program an industrial robot in a safe and controlled environment (optional table-top mounting available).

The CR-35iA, the first-ever force limited Collaborative Robot from FANUC, combines unrivaled strength with outstanding safety to make interactive robot/human collaboration possible for a much wider range of applications. This is the only Collaborative Robot in the world that can lift heavy objects, up to 35 kg.

**Advanced Manufacturing CERT Cell**

Partnering with FANUC to bring education the first collapsible fully integrated advanced automation cell. The AM Cert is the next level of training once the student has grasped the concepts of handling tool operation, vision and DCS that is offered through the fenced, fenceless or Cobot CERT solutions from FANUC. Buy as is or customize to suite your particular requirements!

**Machine Tending Education Cell Simulator**

The MTEC-SIM is a compact, budget friendly version of the MTEC and teaches programming of a robot to CNC machine tool in a simulated environment. This machine comes ready for mill and lathe operation with the robot moving a blank from a pick location to a simulated mill vice or lathe chuck in one compact cell.

Visit x-cal.us/apt for more information.
Amatrol's Industrial Electrical Wiring Learning System (85-MT6) introduces learners to the basics of electrical wiring, such as wire termination, wire sizing, conduit sizing, terminal block installation, and wire splicing, as well as how to read and create electrical prints.

**Related Electrical Products**

- AC Electric Motors Control Systems and Training
- AC/DC Electrical Learning System - T7017A
- Electric Relay Control Unit - 90-EC1A
- Electrical Fabrication 1 Learning System - 950-ELF1
- Electrical Power Distribution Learning System - 85-MT7-B
- Electrical Wiring Training System - 850-MT6B
- Industrial Electrical Wiring Learning System - 85-MT6
- Industrial Wiring Schematic & Installation Training System
- Portable AC/DC Electrical Learning System - 990-ACDC1
- Portable Electric Relay Control Learning System – 990-EC1

**Learning Topics**

- Introduction to Electrical Control Wiring
- Electrical Control System Wiring
- Pneumatic Control Circuit Wiring
- Electrical Prints
- Electric Panels
- Wiring Between Panels
- Wire Color Coding
- Wiring Between and Outside Panels
- Wire Bundling
- Electro-Pneumatic Valves
- Pneumatic Schematics
- Electro-Pneumatic System Installation

**Key Features**

- Industrial Standard Components
- Heavy Duty Welded Steel Workstation
- Industrial Standard Wiring
- Double-Sided Workstation
Amatrol offers an array of HVAC Industry Learning Systems that enable students to develop technical skills in all areas of HVAC Industry technology.

The challenges faced by the HVAC Industry are many and varied and the demand for knowledgeable HVAC Industry workers is high and foretasted to remain strong. New workers must be able to successfully interact with increasingly sophisticated systems as the HVAC Industry transforms to meet new, sophisticated market demands.

Amatrol combines basic knowledge with applied, hands-on skills to enable learners to develop the skills needed in modern HVAC Industry. Amatrol’s HVAC Industry Learning Systems are comprehensive, offering strong curriculum, equipment and multi-media to help instructors create those teachable moments where students grasp HVAC Industry concepts and how to really work with them.

In addition to learning systems geared toward post-secondary and industrial customers, Amatrol also offers systems specifically designed for high schools. One of the biggest challenges facing the workforce today is a skilled worker shortage. Because of this, Amatrol is dedicated to providing high schools with learning solutions that will cover applicable STEM knowledge and advanced manufacturing topics and skills.

iConnect Training has been producing the finest HVAC/R training units for education for over 30 years. They can be found in high schools, Career Centers, Community Colleges and Industry Training Centers worldwide. The series of HVAC training units includes everything from basic heating and cooling training systems to “Build Up” trainers and Technician Equipment packages.

**iManifold by iConnect Training**

The smart device displays system pressures, temperatures, superheat and subcooling while simultaneously calculating performance targets. The iConnect iManifold application technology eliminates the need for manual calculations, analyzes system data, troubleshoots system problems, and generates our exclusive VeriFi™ by iConnect performance reports.
Cyber Security Skills are in high demand as threats continue to plague enterprises around the world.

In today’s Global IT environment, CYBER SECURITY goes well beyond traditional network security.

Based on the National Institute of Standards Technology (NIST) - Cyber Security Frameworks, the new ETG/Marcraft Cyber Security Essentials - Concepts and Practices course covers both theory and hands on labs:

- Critical Infrastructure Security Systems and Devices
- Intelligent Computing and Controlling Devices and Systems Security
- Business Information Technology (IT) Network Security Systems and Techniques
- Industrial/Utility Industrial Control System (ICS) Networks and Devices Security
- Medical Network and Data System Security
- Ethical Hacking Roles and Tools

The latest vendor-neutral A+ and Network+ Certification programs from CompTIA are the crucial first step in developing the knowledge, ability and skills currently demanded by the IT industry.

More than 400,000 students and technicians have relied on Marcraft for IT training and Certification exam preparation.

"In short, America’s economic propriety in the 21st century will depend on cyber security.”

- THE WHITE HOUSE
  Office of the Press Secretary

Prepare students to challenge ISACA Cybersecurity Fundamentals Certificate Exam!

IT Certifications

Microsoft Networking Fundamentals
MTA Exam 98-366
Introduction to Networking

Microsoft Security Fundamentals
MTA Exam 98-367
Introduction to Security
Cyber Security Essentials

CompTIA A+ Certification
Maintaining and Repairing PC’s

CompTIA Network+ Certification
Network+ Certification

ISACA Security Fundamentals Certificate
Cyber Security Essentials

CompTIA Healthcare IT Technician
Cyber Security Advanced Healthcare IT

CompTIA Security+
Cyber Security Essentials

Certified Ethical Hacker
Hacking, Cracking and Internet Jacking
(Advanced hacking)

CompTIA Advanced Security Practitioner (CASP)
Advanced Enterprise Security

“Few job categories can match the explosive growth in demand for cyber security talent.” - CIO Journal
MINDS-i is rocking the robotics world through a high-technology platform that is simple to use, extraordinarily durable, infinitely modifiable and relevant for the 21st century.

The MINDS-i Vision MINDS-i Robotics has a revolutionary vision of what robotics should be. This vision fuels the MINDS-i line of products - build a robot using our patented quick lock construction elements designed to be extraordinarily durable, infinitely modifiable and undeniably equipped to achieve the best performance, no matter where the path leads.

**Minds-i STEM Robotics Foundations Lab - 6X6**

*High School and Post Secondary STEM & Robotics Curriculum*

This student LAB is designed to accompany the MINDS-i Foundations Curriculum as an introduction into the world of STEM and Robotics. It is designed as an interactive approach to applied science, technology, engineering and math. In this course students will become familiar with the basics of robotics and programming through teamwork.

**Minds-i Drones Lab**

MINDS-i’s Curriculum combines STEM with essential life skills relevant to today’s needs

This student LAB is designed to accompany the MINDS-i Drones Curriculum as an introduction into the world of Drones and Robotics. It is designed as an interactive approach to applied science, technology, engineering and math. In this course students will become familiar with the basics of Drone robotics and programming through teamwork.

**Minds-i STEM Robotics Foundations Lab - 4X4**

*High School and Middle School STEM & Robotics Curriculum*

This student LAB is designed to accompany the MINDS-i Foundations Curriculum as an introduction into the world of STEM and Robotics. It is designed as an interactive approach to applied science, technology, engineering and math. In this course students will become familiar with the basics of robotics and programming through teamwork.

An interactive approach to STEM Education
STEM

STEM Design Program
Programs that help students discover STEM career pathways
Our complete STEM curriculum works straight out of the box.

Aims of the Exploring STEM program
• Increase students’ enthusiasm for STEM through active, project-based learning
• Improve students’ understanding of basic concepts of engineering and technology
• Help students see the connections between the STEM subjects
• Expose students to a wide range of STEM career pathways
• Help students understand the diversity of applications of STEM in a wide range of different areas of industry and everyday life.
• Develop 21st Century Skills such as critical thinking, problem solving, creativity, team working, and the ability to process, question, and analyze information.

“One of the benefits of the program for the students is that it encourages them to do more critical thinking and problem solving; they really have to think about their answers.”
Mr. Leavernard Jones / Technology Teacher

Engineering
Ensure your students have the right skills for the job – our engineering program is designed to bridge the skills gap
Our engineering program comprises three main strands of Control and Instrumentation, Mechanical Engineering and Electronic Engineering. Our comprehensive program addresses a broad range of related engineering areas, including:

• Industrial Control Trainer
• Electrical Engineering
• Electronics
• Mechatronics
• Mechanical Engineering
• Engineering Science
• Engineering Materials Technology
• Manufacturing Techniques

“One of the reasons we really liked working with LJ Create was that they had so much to offer us in the way of engineering teaching resources.”
Lynne Spinarto
Technology Chair Person at MacArthur High School

Contact us for a FREE demo of our online library!
Transportation & Logistics: Automotive Technology

LJ Create Automotive

Our practical NATEF-aligned programs take your students from beginner to shop-ready

This program has been designed to allow you to build a NATEF certified automotive program that will enable your students to become new hi-tech auto technicians.

A unique blend of online digital learning resources and practical equipment combines to create an automotive teaching program that will deliver the knowledge and practical skills students need to achieve success.

Automotive theory taught in a practical way

- Sectioned Components
- Autotronics Panel Trainers
- Autotronics Boards
- System and Component Rigs
- Medium/Heavy Truck Rigs

Beautiful, Immersive Content:

- Easy access via cloud-based portal
- Continuously updated content
- Access for all enrolled students and staff
- Student and school performance reporting facilities

Our learning content is aligned to NATEF standards - at MLR, AST, and MAST levels!

We continually update our content to meet these standards.

“It’s totally different here, we’ve got computers and all these trainers. It’s an excellent way to learn and is much better than just reading books. We have our own laptops so I can go home and study, so when I come in here I can get 100%!”

- Alex Diaz, Automotive Student
Heavy Equipment Simulation Training

Teach Heavy Equipment operations safely and cost-effectively with Simlog’s 10 PC-based Personal Simulators for Construction, Mining and Forestry. Each simulator leverages the power of today’s off-the-shelf (Windows) PCs to finally provide truly cost-effective help for training heavy equipment operators. Chose the USB-ready replica controls or the OEM Industrial Chair option and you can begin training in minutes!

Add Simulation Manager software to track each students results and competencies as they progress through the training.

With Simlog, your students will be learning the right way to do things, thanks to “best practices” input from our OEM partners and training professionals just like you. So you’ll find the right kind of simulated tasks, the right kind of task progression, and the right way of evaluating the simulated work.

**Getting Started is Easy!**

- Select the Personal Simulators that fit your program
- Choose the right USB Replica Controls for your setup
- Identify a suitable desktop or laptop PC and video display

Also Available: Mobile Crane, Tower Crane, Off-Highway Truck, Mining Truck, Electric Rope Shovel, Drill Jumbo, Forwarder, Harvester, Material Handler, Reach Lift Truck, Backhoe Loader, Wheeled Material Handler
Virtual Reality Training Tool for Painters and Coaters

SimSpray is the leading training tool for the painting and coating industry. It’s an easy-to-use, turn-key training tool that provides accessible hands-on experiences with virtual reality simulations. Transform paint training with SimSpray for objective performance analysis, customizable training curriculum, and an engaging recruitment tool.

SimSpray has been shown to save up to 50% of training costs and train proficient workers faster. Train students in a fun, engaging way, and prepare them with the core skills they’ll need on the job.

- **Real-Time Tracking:** Integrated, camera-based, visual tracking with easy-to-use deployment steps.
- **Display:** Mounted monitor with touch screen controls and additional HDMI output for external displays.
- **HMD:** High-quality, immersive, and ergonomic professional-grade headset.
- **Spray Equipment:** Weighted spray gun, powder gun, or abrasive blasting hose with functional controls.
- **Case:** Lightweight, compact design with convenient component storage and easy setup.

Training Content & Features

<table>
<thead>
<tr>
<th>Processes</th>
<th>Techniques</th>
<th>Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVLP</td>
<td>Applicator Speed (Cue)</td>
<td>Automotive</td>
</tr>
<tr>
<td>HVLP Conveyor</td>
<td>Spray Angle (Cue)</td>
<td>Aerospace</td>
</tr>
<tr>
<td>Airless</td>
<td>Part Distance (Cue)</td>
<td>Construction</td>
</tr>
<tr>
<td>Airless Conveyor</td>
<td>Transfer Efficiency</td>
<td>Heavy Equipment</td>
</tr>
<tr>
<td>Air-Assisted Airless</td>
<td>Mil Build</td>
<td>Industrial Components</td>
</tr>
<tr>
<td>Air-Assisted Airless Conveyor</td>
<td>Defect Identification</td>
<td>ASTM Panels (American Standards of Testing &amp; Measurement)</td>
</tr>
<tr>
<td>Powder Coating</td>
<td>HVLP Edge-Blending</td>
<td>Basic Panels</td>
</tr>
<tr>
<td>Powder Coating Conveyor</td>
<td>Painting on Conveyor</td>
<td></td>
</tr>
<tr>
<td>Abrasive Blasting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SimSpray is a valuable tool to use for training paint associates for manual painting technique practice. Increased associate practice/feedback 15x more than live painting.

- Top 10 Auto Manufacturer
Port Crane Simulators

Utilizing simulators in the classroom allows you to deliver professional training at a lower cost to your students. Port Crane simulators provide flexible solutions to meet your educational needs with a wide variety of options to choose from.

These simulators replicate a wide variety of operating conditions to give students hands-on experience operating cranes in difficult and demanding conditions. These state-of-the-art Port Crane simulators provide a realistic 3D solution which deliver all the benefits of actually operating the port crane. Also, we provide quality maintenance and support to keep your training at peak performance.

- Real-time - hands on training
- Realistic sights, sounds and motion
- User-Friendly Instructor stations
- Cost-effective solutions
- Absolute confidence

Wärtsilä Navigation and Bridge Simulators by Transas

Wärtsilä Simulation & Training solutions connect maritime stakeholders by providing integrated solutions and high quality content that bridges the gap between STCW and required level of competency.

Complete Solutions

- Wärtsilä Academy supports training providers throughout the whole process: Training need analysis (TNA)
- Selecting the right simulation technology
- Design of training facilities; consultancy on infrastructure works
- Turnkey project management and deployment
- Customized development for specific applications
- Train-the-trainer courses
- Certification support
- Customized maintenance and support services
- Courseware and training content development and delivery

Products Available

- Navigation and Bridge Simulators
- Technological Simulators
- Vessel Traffic Systems Simulators
- Simulation Development Tools
Welding

Welding instructor and educator tools to bridge the manufacturing skills gap.

Lincoln Electric is the world leader in the design, development and manufacture of arc welding products. In addition to being the industry standard for welding equipment and supplies, Lincoln Electric also develops and supplies Welding Training Simulators and supplies. We are proud to represent Lincoln’s line of educational Welding Simulators and is your Authorized Educational Reseller.

**VRTEX® Trainers**

Lincoln Electric’s VRTEX® virtual reality arc welding trainers provide a powerful, cutting-edge solution for cultivating welding talent quickly and resourcefully. From superior graphics creating the most realistic and responsive welding puddles available, to exceptionally accurate sounds and movements, what can be learned virtually with VRTEX® seamlessly transfers into real-world, hands-on welding training.

**VRTEX® Engage™**

This standalone system, designed to introduce basic skill trades to students in non-traditional academic settings, gives users a taste of the more advanced VRTEX system designed specifically for welding training.

**VRTEX® Transport™**

A basic, entry-level welding training system designed to provide mobility in an easy to use and engaging welding training tool. Ideal for initial, basic welding training, as a recruitment and engagement tool or as an evaluation tool for instructors and educators.

**VRTEX® 360**

An advanced level welding training system. It is designed to provide a full featured, expandable platform in an easy to use and engaging welding training tool.

**REALWELD® Trainers**

With the REALWELD® Trainer in your welding booth, students can practice Stick, MIG and Flux-Cored arc welding, while receiving audio coaching and weld performance tracking on 5 key parameters. It’s like having a teacher’s assistant right in the booth helping to advance every student toward their career goals.

**Robotic Trainers**

Robotic welding training solutions focus on enhancing the ability to train on robotic programming, welding technique and skills.
The X-Cal Difference

For new construction and renovation projects, X-Cal combines a clear vision of your goals with our professional consulting, planning, implementation and support services, to maximize your results:

**Consulting**

Before the space planning begins, our staff will meet with you to understand your objectives, and help to define a successful and sustainable program implementation.

**Planning**

Next, we will assist in the careful planning of a total learning environment – not just a “lab.” We’ll work with your team and architects to help layout your space, and provide you with detailed lab drawings and product specifications.

**Implementation**

When your building is ready, our factory-trained technicians will complete your furniture and equipment installation on time, and within budget. And our manufacturing partners will provide effective professional development for your faculty and lab support staff, either on-site or at our training facilities.

**Support**

Once your program is up-and-running, our team of outside service technicians and inside support staff will work with you to ensure that your program continues to function as specified, and is kept up-to-date, for many years to come.

Our mission is to provide cutting edge technology, equipment and curriculum that will help every learner achieve success in the world of tomorrow.