Technical Laboratory Systems, Inc. was founded by Tim and Dede Brown in 1977 to meet the growing need for technical and vocational training and has since developed into a full-service educational equipment and instructional software provider.

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.

Tech-Labs 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**

Five years ago we created a Design Lab in our facility to demonstrate the technical solutions we offer. The Design Lab was a huge success and allowed nearly forty groups to evaluate our offerings in the first year. The Design Lab was filled with equipment, fixtures, and tables, but we made it work and customers valued the time spent.

With larger groups asking to visit, we realized the Design Lab’s major limitation — we were running out of space. One hundred year old buildings can be that way — we needed more space, more tech, and more; changes had to be made.

We began our transition from Design Lab to a Solution Center by building a space that was 100% designed around what we do and the customers we serve. Every department shared ideas while we searched for a location and designed a rough sketch of our future building.

“It was fun to work together on a project that was our own. If you have worked with us on a large project, new construction or renovation you know that we start with a tape measure, design the layout in CAD, then insert all the specs and dimensions of the equipment.”

- Warner Brown, Vice President

It took over two years to find the right land and the developer. We found the location in a commercial development that fit our needs now and into the future; we went all in. The Solution Center is 14,000 square feet; 7,000 square feet of office, demo and meeting rooms, and 7,000 square feet of warehouse. The warehouse will store equipment and be a demo space for large pieces of equipment.

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, 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, FDM, PolyJet, Post Processing, Fume Extractors

3D Scanners ....................................................................... 25

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 ..................................................................... 35

Automotive Technology, Collision Repair, Heavy Equipment, Maritime, Port Crane

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

Limited training space?

Check out Amatrol’s portable learning systems!

See page 13

Skill Boss

Performance-Based Assessment & Hands-On Training

Required by MSSC for CPT+ Certification Assessment

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

NIMS, Lightweight Innovations for Tomorrow (LIFT) and Ivy Tech Community College are partnering 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.

The initiative will 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 entire region; and
- Equipping a competent workforce with the knowledge, skills and credentials they need to enter into and advance in the field.

In order to address the critical need for skilled maintenance technicians, NIMS has created nine stackable certifications in Industrial Technology Maintenance (ITM).

NIMS ITM Certifications are available in each of the following duty areas:

- Duty Area 1: Maintenance Operations
- Duty Area 2: Basic Mechanical Systems
- Duty Area 3: Basic Hydraulic Systems
- Duty Area 4: Basic Pneumatic Systems
- Duty Area 5: Electrical Systems
- Duty Area 6: Electronic Control Systems
- Duty Area 7: Process Control Systems
- 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.

Go to www.tech-labs.com/certification-programs 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.

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

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

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 two 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 www.tech-labs.com/mssc for more information!
Amatrol's Certified Production Technician Program

The Certified Production Technician (CPT) program enables students to build foundational skills such as engaging in their work, 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.

[tech-labs.com/ulinc](http://tech-labs.com/ulinc)
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.

CNC Training Solutions

FANUC America is partnering with educational/academic institutions across the country to develop programs, curriculums, 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.

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

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

**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

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

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

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!

“Your Success is Our Success” is the philosophy and commitment to all of Amatrol’s customers. They provide 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—从 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 flexibility
- Extensive curriculum spanning basics through advanced
- Authentic industrial troubleshooting
- Durable, industrial equipment designed for effective teaching
- Superior multimedia interactivity connects with learners
- eAssessment to accelerate learning and improve effectiveness
- Learning anywhere, anytime – 24 x 7
- Computer based training (CBT) with Amatrol’s eAssessment (available via the web)

Multimedia

Genuinely interactive multimedia with vivid 3D graphics designed to teach as well as engage, checking for understanding and providing feedback—not the common quiz question so often claimed as “interactive.” Frequently includes virtual skills that allow students to perform the same activities in simulation they would with hands-on equipment. Available via the web or to own.

Curriculum & Assessment

Comprehensive Curriculum For Individual Self-Paced or Group Learning Flexibility. Curriculum is, indeed, the key to learning. Great equipment alone is not enough. Excellent teaching materials is their promise and commitment to you.

Key Industry Skill Areas Integrated Into Amatrol’s Learning Solutions:

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

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

Electronic Fault Insertion Available on the Following Portable Learning Systems:
• PLC - Allen Bradley
• PLC - Siemens
• 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 www.tech-labs.com/portable for more information!
Industrial Skills Trainers: 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.

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.

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.

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.

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.

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.

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.
Industrial Skills Trainers: *Process Control*

**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):** This system offers expansions like: pitot tube flow transducer, Venturi flow transducer, and orifice plate flow transducer.

**Ultrasonic Liquid Level Learning System (T5552-L1):** This course 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).
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 reduces invested time and cost.

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
Bayport Training & Technical is dedicated to providing specialized services and educational or industrial tools aimed at promoting a true “hands-on” teaching concept. The variety of cutaways, demonstrators and models are conceived and orchestrated 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.

The more common valves found in oil refineries and chemical plants are:

- Cut-Away Ball Valves (5006)
- Cut-Away Plug Valves (5005)
- Cut-Away Gate Valves (5001)
- Cut-Away Globe Valves (5002)
- Cut-Away Check Valves (5003-4, 5007, 5010)
- Cut-Away Needle Valves (5011)
- Cut-Away Butterfly Valves (5020)
- Cut-Away Safety Valves (5008)
- Cut-Away Pressure Relief Valves (5015)

**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!

**Acrylic Static Training Models**

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

**Mechanical & Maintenance Trainers**

This mechanical trainer unit is designed for maintenance and operations personnel in the Oil and Gas Industry.

**Process Trainers**

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

**Process Units**

Training process units for a variety of industrial processes.
High School Project/Work-Based Learning

Skill-based learning programs that attract and retain high school learners

Engineering and technology offer rewarding career opportunities! Amatrol’s high school programs are designed to engage students who demand a high degree of interactivity and 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. All of Amatrol’s learning programs allow students to fully experience the rewards of hands-on, applied technical learning.

**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**
*A complete four-semester program, 65 hours per semester*

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**
*A complete four-semester program, 65 hours per semester*

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+. 

**Turn-Key Solution for Industry 4.0!**
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.

Desktop Design
Print small, precise models in a single material, right on your desktop.

Design Series
Gain efficiency and design freedom with more material options and hands-free support removal.

Production Series
Bring agility and aesthetics to every stage of product development with the widest range of colors and material properties for prototypes and tooling.

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.
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.

Stratasys founder Scott Crump invented FDM Technology more than 20 years ago, and Stratasys has continued to lead the 3D printing revolution ever since.

**Benefits of FDM 3D Printing**

3D printers that run on FDM Technology build parts layer-by-layer from the bottom up by heating and extruding thermoplastic filaments.

- Clean, simple-to-use and office-friendly
- Supported production-grade thermoplastics are mechanically and environmentally stable
- Complex geometries and cavities that would otherwise be problematic become practical with FDM technology

**Design Series**

*Making prototyping smarter and easier*

Build with fine details, color and multiple textures using the versatile capabilities of the Design Series 3D Printers.

**Idea Series**

*Professional Desktop 3D printers*

Idea Series Printers provide professional 3D printing capabilities in an affordable, desktop platform.

**Production Series**

*Large-capacity FDM printers*

The Production Series offers the capacity and material variety to meet the demands of the manufacturing environment.

**NEW! Fortus 380MC Carbon Fiber Edition**

Strong, Light-Weight
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.

**Equator™ Gauging System**

The Equator gauging system enables process control by delivering highly repeatable, thermally insensitive, versatile and reprogrammable gauging to the shop floor. With the patented low-cost design, unique construction and method of operation, Equator systems are a high-speed comparative gauge for inspection of medium to high volume manufactured parts.

**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
3D Printers: Desktop Metal

The Printer Shapes the Parts
Unlike laser-based systems that selectively melt metal powder, the Studio printer 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 like the use of closed-cell infill for lightweight strength.

Cost-Effective
The Studio System is up to ten times cheaper than comparable laser-based systems. With purchase and subscription pricing options, it’s the only metal 3D printing system that is cost-effective for engineering teams.

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.

Change Materials in Under a Minute
The Studio printer was designed with safe-to-handle, swappable media cartridges and quick release print heads for seamless material changes.

Expert Metallurgy Built-In
The Studio System combines unique materials profiles with part data to construct sintering plans for every part. Closed loop thermal control enables real-time heating regulation throughout the sintering cycle, ensuring every part is uniformly heated and cooled.

Software-Controlled Workflow
Unlike other systems that require 3rd party equipment, the Studio System was designed as a complete workflow. Every stage of the process is fully automated and managed by sophisticated software, making it simple to go from CAD to part.

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.

Specifications:
- Speed: 16 cm³/hr
- Layer height: 50 μm
- Build Area: W 300 x D 200 x H 200 mm
- Tight Tolerances: ± .002 in./in (geometry dependent)

The Furnace
- Heating: Hybrid; Microwave-enhanced
- Peak Temp: 1400°C
- Footprint: H 150 x W 125 x D 75 cm

No more waiting for machined or cast parts. Iterate faster by printing highly complex metal parts—without leaving the office.
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.
3D Scanners

3D Digital Corporation is the innovative leader in lightweight, USB 3D laser scanners that provide extremely high accuracy, yet are affordable and the most easy-to-use product on the market.

Visit [www.tech-labs.com/3d-scanners](http://www.tech-labs.com/3d-scanners) for more information.

**Escan - Reverse engineering at an affordable price.**

The Escan Standard Base and Extended Base models can be upgraded to enhanced Escan to provide a high resolution option allowing you to increase the maximum points per line from 980 to 1920. This reduces the amount of approximation in the scanned data, allowing for more detail to be captured.

**Optix 500 Series**

Cutting-edge laser technology to make precision scanning - quick & simple.

The Optix 500 Series sets new standards for accuracy and resolution, and is the premium choice for 3D object scanning. Three configurations produce optimal precision across a spectrum of scan-range sizes and each model is modular, lightweight and portable.

Automated Scanning Inspection Systems — AuSIS™

Our state of the art AuSIS line of 3D scanners and inspectors are unlike anything else on the market! We have a solution for every requirement and we work with you to make sure you have exactly what you need.

**Shop Inspector™**

The newest member of the 3D Digital line is the AuSIS™ Shop Inspector™ which will allow you to simultaneously scan, compare and report at virtually the touch of a button to help you reduce time and save money.

**Robot Inspector™**

The AuSIS™ Robot Inspector™ gives you the flexibility of scanning medium sized objects faster and more accurate than ever before. This inspector will scan, stitch together and show the results of your scan in near-real time.

**Multiple Scanner**

The largest and most versatile member of the AuSIS™ family. The Multiple Scanner gets its name from the fact that it uses multiple scanners together to simultaneously scan larger objects faster and more accurate.
Anatomy Trainers

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

**SynDaver Patient:** in addition to all of the existing features that have made the Synthetic Human world-famous, the SynDaver Patient also includes an open-source physiology engine that controls body motions and all aspects of synthetic biology.

**SynDaver Synthetic Human:** the most elaborate and sophisticated full-body surgical simulator ever devised. An exquisite 3D jigsaw puzzle; every muscle, bone, vascular component and organ is removable and replaceable. This is the apex of hands-on surgical simulation.

**Silicone Anatomy Arm**
Our silicone anatomy arm is made from silicone (muscles, nerves and vasculature) and polymer composite (bones). This education-grade model includes bones, fully articulating joints, muscles, tendons, veins, arteries and nerves. Since the model is made from silicone and dry polymers wet storage is not required.

**SynAnatomy 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.

**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.
Anatomy Trainers

Lifecast ALS Adult
The Lifecast Body Simulation Adult is a highly accurate and lifelike female adult body. Based on the scans and Lifecast’s of real people, the Lifecast Adult features life-like details such as veins and underlying structures as well as hair and includes an airway and articulated mouth for airway management. Available in wide range of ethnicities and created with same weight and is the height of an average adult, the Lifecast Adult will encourage more natural handling, bringing a new level of realism to medical training.

Lifecast ALS Baby
A highly accurate and lifelike new born based on the scan of a real infant, the New Born Baby features life like fine details such as veins and underlying structures as well as optional hair. An umbilical cord can be requested and New Born Baby is available in wide range of ethnicities. Created to an average new born weight and size, the New Born Baby encourages more natural handling, bringing a new level of realism to medical training.

Lifecast ALS Toddler / Child
The Lifecast Body Simulation Toddler is a highly accurate and lifelike young child’s body. Based on the scans and Lifecast of real children, the Lifecast Toddler features lifelike fine details such as veins and underlying structures as well as hair. Lifecast Toddler comes with an airway and articulated mouth for airway management. Available in wide range of ethnicities and created to the weight and height of an average young Toddler, the Lifecast Toddler will encourage more natural handling, bringing a new level of realism to medical training.

Lifecast Basic Baby
A highly accurate and lifelike new born based on the scan of a real infant, the New Born Baby features life like fine details such as veins and underlying structures as well as optional hair. An umbilical cord can be requested and New Born Baby is available in wide range of ethnicities. Created to an average new born weight and size, the New Born Baby encourages more natural handling, bringing a new level of realism to medical training.

CNC & Robotics Training

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 REAL SOLUTIONS
CNC & Robotics Training

Certified Education Robot Training

As more companies incorporate robotics into their operations, the demand for high-paying careers related to designing, implementing and using industrial robots is increasing. 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 is available).

Education Tooling Package
- 120VAC transformer
- Compressor
- Vacuum or clamping gripper
- Tooling

CERT Training Program
- HandlingTool software
- ROBOGUIDE simulation software
- Web courses on robot operations
- HandlingTool and HandlingPRO

Optional:

iRVision CERT Instructor Program
- 2D integrated iRVision software, camera & cable
- Web and live training course on vision setup and operation

Additional Options:
- Project Based Learning
- Force Sensor
- Conveyor (in bound/out bound)
- Vision lighting kit
- Custom solutions incorporating any FANUC robot
- Dual robot material handling system

Advanced Manufacturing CERT Cell

FANUC CERT Cell specifically built for Advanced Manufacturing!

FANUC America partnered with one of their industrial integrators 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!

Material Handling • Machine Tender • Fenceless Machine Tender

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.
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

**TUE-200 Residential Wiring Demonstrator**
Students gain a full understanding of National Electrical Code residential electrical circuits. Through actual practice, students attain a substantial beginning level skill and proficiency using tools of the electrical trade.

**TUE-150 Residential Wiring Trainer**
This Trainer Panel is used to demonstrate electrical principles similar to those found in a residential dwelling. It also has provision for extensive switching and connection of lamps and outlets. The trainer has a 24 volt power supply that is used to wire and test all circuits. After the instructor has approved wiring, 115 VAC can be applied using the key-lock circuit breaker control. The ability to use low voltage for testing and 115 VAC for final wiring is a valuable teaching aid.
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.

### HVAC Topics
- Electrical
- Electronics
- Fluid Power
- Mechanical
- Process Control
- Thermal

### 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.

“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
- 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

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

- THE WHITE HOUSE
  Office of the Press Secretary

“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.
### STEM Design Program

**Middle School Career Exploration Program**

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.

### 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

“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

Contact us for a FREE demo of our online library!
Transportation: 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

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

We continually update our content to meet these standards.

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

“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 affordably 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
Automotive Painting and HVLP Coating

SimSpray is the immersive virtual reality spray painting simulation, teaching fundamental spray painting skills for HVLP processes.

Visual cues, detailed scoring, pass, and performance tracking provide a continuous source of feedback. Realistic paint effects show the coat quality, thickness, and defects produced by the student’s technique.

The head mounted display (HMD) shows the virtual environment and chosen part. In the environment, students use the SimSpray paint gun to paint the project.

Through the monitor, instructors and students can see the project from the painter’s point of view, a detailed review mode, or a paint coverage mode. Each view provides valuable insight for improving paint technique. SimSpray can be connected to external for classroom training experiences.

Increase hands-on practice by eliminating time spent on part cleaning and drying processes.

Objective scoring, live feedback, and detailed performance metrics guide students to skill mastery.

SimSpray is designed for classroom, shop, and off-site locations with its easily stored, mobile, turn-key features.

Add-On: Edge Blending

The Edge Blending module teaches the proper technique for spot and panel painting. Students learn to blend new and existing paint through increased access to practice projects.
Maritime Simulation & Training

Thanks to close cooperation with marine schools worldwide, Transas specialists have ensured that the functionality of Transas simulators provides effective training and competence assessment for seafarers. The simulators enable various levels of training, from familiarization, standard operation and watch-keeping, to advanced operation, troubleshooting and vessel resource management.

- Transas marine simulation systems have been used extensively by specialists in commercial fleets, navies and coast guards;
- More than 5,500 Transas simulation systems are installed in over 1500 training and simulation centers in 106 countries;
- Transas securely holds 45% of the international commercial maritime simulation market;
- Transas simulators are developed in line with key international maritime requirements (STCW, IMO model courses and specialized standards), and hold certificates from leading classification societies.

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
Lincoln Electric offers the welding instructor and educator the right 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® Engage™ Virtual Welding Trainer**

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

**VRTEX® Mobile Virtual Welding Trainer**

The VRTEX® Mobile is a basic, entry level welding training system designed to provide mobility in an easy to use and engaging welding training tool. The VRTEX® Mobile is ideal for initial, basic welding training, as a recruitment and engagement tool or as an evaluation tool for instructors and educators.

**VRTEX® 360 Virtual Reality Arc Welding Trainer**

The VRTEX 360 is a best-in-class, 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.
The Tech-Labs Difference

For new construction and renovation projects, Tech-Labs 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.