ABOUT US

Founded in 1979, Allegheny Educational Systems provides innovative, technology-based educational systems and professional services to over 2,000 schools, colleges and universities throughout Pennsylvania, New York and New Jersey.

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.
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### THE ALLEGHENY EDUCATIONAL DIFFERENCE

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Amatrol's HVAC Technology Learning Systems

Amatrol's series of Thermal Systems Training units provide comprehensive coverage and content in the areas of Thermal Science, Heat Pump Technology, Heat Pump troubleshooting, and Heat Pump Applications. Each of these programs include hands-on exercises on State-of-the-art training systems using real world components. Each topic area has curriculum supported by print material and exciting interactive multimedia spanning basics through advanced topics and troubleshooting.

Geothermal Systems

Geothermal systems are becoming very popular as an alternative energy source and the need for trained technicians is increasing rapidly. This system teaches the basics as well as advanced troubleshooting techniques in a systematic approach.

Steam Learning Systems

Amatrol's Steam Learning system introduces students to the operation, installation, maintenance and repair of steam systems and their application in commercial and residential as well as industrial settings. The curriculum covers a range of steam system topics such as how to operate a boiler and theoretical knowledge like the coefficient of volume and thermal expansion.
Imperial Training Systems

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

MODEL TU-155 - Industrial Refrigeration

Features:
• Trainer: Self-contained and freestanding with storage space underneath
• Compressor: Semi-hermetic type with 2 HP capacity
• Crankcase heater with automatic control system
• 2 forced air type evaporators have 2 common types of defrost mechanisms complete with solenoids, timers, and associated equipment
• 2 standard types of water cooled condensers (tube-in-tube and shell-in-tube) supplied and piped to be used with city water and included water tower
• Hot gas by-pass system keeps operating pressures of the compressor constant regardless of the evaporator level
• Crankcase pressure regulator allows the compressor to start easily under high evaporator pressures

This trainer enables students to learn principles of commercial and industrial refrigeration systems.

iManifold

The smart device displays system pressures, temperatures, superheat and subcooling while simultaneously calculating performance targets. The Imperial iManifold application technology eliminates the need for manual calculations, analyzes system data, troubleshoots system problems, and generates our exclusive VeriFi™ by Imperial performance reports.

• Over 40 Refrigerants – Accommodates the whole spectrum of most common refrigerants.
• Troubleshooting – Logarithmic technology that identifies common system problems and recommended fixes.
• VeriFi™ by Imperial Reporting – Provides students a snap shot of system performance at conclusion of project.
• Deep Draw Manifold – To educate on evacuate process.
• Wireless Updatable Firmware – Eliminates need to send unit back when new upgrades become available.
SimBuild Carpentry teaches fundamental skills used in residential construction. Students learn by completing increasingly complex work orders from reading a measuring tape, to laying out a wall section, identifying components of a gable roof, and estimating materials needed to build a floor. Objective scoring and badges earned based on performance keep students engaged. While SimBuild Carpentry teaches the practical skills of carpentry and safety, the student learns core academic concepts in reading, math and problem solving.

Increasingly complex work orders teach how to:

- Estimate, measure, and cut materials
- Place studs, trimmers, rafters
- Frame floor, wall, roof systems
- Install doors, windows, locks, hinges
- Build stairs
- Install and finish drywall
- Calculate rise and run

SimBuild reinforces general academic skills such as reading, math and problem solving, along with construction-specific skills like tool reading, identification of building system components and estimating materials. The integrated Learning Management System tracks student progress and skill acquisition.
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

Certified Production Technician (CPT): The MSSC System awards certificates to individuals who pass any of its four Production modules: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; and Maintenance Awareness and a full Certified Production Technician (CPT) Certification to those who pass all four.
Epilog Laser Engravers/Cutters

From industrial shop classes to art programs, schools around the world are discovering what a powerful tool a laser can be in the education of students. The laser process can incorporate industrial design, artistry and woodworking skills. It can increase a student’s ability to think critically while developing creativity.

Roland Vinyl Cutters - Offering plug-and-play ease, technological sophistication, compact convenience, and the reliability you expect from Roland, our high performance vinyl cutters accelerate your ability to create professional signs, displays, vehicle graphics, decorated apparel and window tinting. Each comes with all the hardware and software you need to get started immediately — right out of the box.

**Use in a Variety of Classes:** A CO2 laser can be used throughout your facility in art classes, industrial design, science, and much more. It adds instant options for creative curriculum in your school.

**Epilog Laser Engravers/Cutters**

**Roland Vinyl Cutters**

**A Full Product Line to Meet Your Needs:**
- Epilog Zing Product Line
- Epilog Legend Product Line
- Epilog Fusion Product Line
- Epilog Fiber Laser Product Line

**Roland Offers a Wide Selection of Cutters:**
- Pro GX-640 Vinyl Cutter
- GX Pro Series Vinyl Cutters
- GS-24 Desktop Cutter
- STIKA Desktop Cutter
Professional 3D Printing Systems in all shapes and sizes

Idea Series

The Stratasys Idea Series levels the playing field by bringing professional 3D printers to individuals and small teams, accelerating creativity.

Size up each system to find the affordability and speed right for you:
- **Mojo** - Affordable, fast color printing
- **uPrint SE** - Larger models
- **uPrint SE Plus** - Larger models in nine colors

Design Series

Stratasys Design Series 3D Printers dramatically tighten design and development cycles, improve communication and collaboration, and resolve issues between design and engineering. They speed products to market and reduce costly mistakes — all while keeping your intellectual property onsite.

**Precision 3D Printers** - Based on PolyJet 3D Printing technology to give you the best surface quality, finest details and widest range of material properties available. Produce color and multi-material models that look and feel just like your future products.

**Performance 3D Printers** - Powered by FDM Technology, these printers deliver models in real ABSplus thermoplastic. Parts are durable and dimensionally stable — perfect for tough testing. And materials are affordable, so you can work creatively and test frequently.

Production Series

The Stratasys Production Series is built to streamline manufacturing while maximizing your possibilities — handling the largest prototypes and accurate low-volume parts with agility.

**Performance 3D Production Systems** - give you durable, accurate parts with predictable mechanical, chemical and thermal properties. Based on FDM Technology, these systems use the same production-grade thermoplastics used in injection molding, CNC machining and other traditional manufacturing processes.

**Precision 3D Production Systems** - Bring agility and aesthetics to every stage of product development and production. Based on PolyJet 3D Printing technology, these systems offer amazing surface smoothness, ultra-fine details and the widest range of material properties available.
Artec Spider 3D Scanner

Artec Spider is a 3D scanner with high resolution, high accuracy and ability to see sharp edges. Such features make Artec Spider the perfect solution for mass production and industrial design where higher-precision scanning of objects with sharp edges and intricate details is required.

Artec Spider Features
- No markers or any manual alignment during post-processing
- High speed accuracy
- Captures texture, brilliant color, and high resolution for accurate 3D images
- Easy to use
- Real time scanning and fusion
- Almost unlimited possibilities

Artec Eva 3D Scanner

Artec Eva 3D scanner is the ideal choice for those that need to receive a quick, textured and accurate scan. Eva doesn’t require markers or calibration. It captures objects quickly in high resolution and vibrant color, which allows for almost unlimited applications.

Artec Eva Features
- Capture objects in seconds
- Extremely light and truly portable
- High speed and accuracy
- No markers, no EM tracking, no calibration
- Luminous color
- Capturing motion
- Almost unlimited possibilities
- Start with a “lighter” version, upgrade at any time!
What is the DIWire?
- First Desktop CNC Wire Bender
- Bends wire, tube & rod
- For rapid prototyping and short-run production

Where Does It Fit In?
- In all Makerspaces along with Laser cutters, Routers and 3D Printers
- High School Pre-Engineering and Tech Ed labs
- Makes Architectural models and frames big and fast
- Uses mixed materials
- Eliminate time consuming, non-reproducible hand bending

What Does It Do?
- Transforms drawn curves from 3D software
- Bend lines and curves in 2D, or solder, weld or fixture into 3D
- DIWire works with Mac and Windows OS
- Wireware software works like a printer driver – it takes an SVG or DWG file to create each bend

Wide Range Of Materials
- Galvanized Steel
- Aluminum
- Brass
- Stainless
- Copper
- Cold bend plastic
- Tubing for hydraulics, pneumatics & conduit
- Round, hex, square, rectangle profiles
- Wire sizes from 1/16” to 1/8”

The DIWire MakerSpace EcoSystem Can Include:
- A Laser Cutter for cutting the central assembly fixtures. This leaves the joints free of glue and solder for freeform assembly
- 3D print each wire clip based on wire size.
- Add additional parts and assemblies as needed to complete the model!
“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 – 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 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, 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.
MANUFACTURING CLUSTER:
C.I.P. 15.0403 ELECTROMECHANICAL TECHNOLOGY / ELECTROMECHANICAL ENGINEERING TECHNOLOGY

**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
“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
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 x 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 Programmable Controllers
- Electrical
- Fluid Power
- Machining
- Plastics

Amatrol – e-Assessment
Identify Employee 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

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Give Your Students An Advantage With Easy-To-Learn CAD Software

SolidWorks offers the best suite of tools for engineering design, documentation, simulation, and sustainable design in one easy-to-learn software package.

Certification and experience with SolidWorks is an in demand skill. Making 3D designs that can be exported to a 3D printer, gives students a glimpse into taking a product from design to testing. In today’s competitive job market, CAD professionals need every advantage they can get, and the SolidWorks Certification Program gives your students a proven edge. Solidworks offers a host of resources for education and a Solidworks Certification course that can help get your students into careers. Solidworks offers tutorials and specialized curriculum for educators (Including: robotics, STEM, medical, machinery, F1, Formula SAE, and a host of other topics!).

SolidWorks® Education Edition includes:

• SolidWorks® Premium Software
• SolidWorks® Simulation Premium
• SolidWorks® Motion
• SolidWorks® Flow Simulation
• Complete Curriculum, including a Teacher Guide and Student Guides, that makes teaching easier at every level.
• Extensive interactive Courseware projects
• Access to our online educational community, plus our library of articles, tutorials, product resources, and more.
Mastercam delivers CAD/CAM software tools for all types of programming, from the most basic to the extremely complex. 2-axis machining, multiaxis milling and turning, wire EDM, router applications, free-form artistic modeling and cutting, 3D design, drafting, surface and solid modeling – whatever your machining needs, there is a Mastercam product for your budget and application.

There are more curricula available for Mastercam than any other CAM system. Our Educational Division continually provides exceptional teacher training and educator support. We have years of experience in the educational market and that helps us understand the specific needs of our instructors, schools, and students. Since Mastercam is the most widely used CAM software in the world, our products are industry proven. Mastercam has been designed for any level of skill or machining. From middle school exploratory classes to a university research lab making complex molds, Mastercam provides the tools to fit the application.

Teaching MasterCam with QuickPart

CAD/CAM can be challenging to learn, and even more challenging to teach. Mastercam QuickPart gives students a fast, easy way to design and cut parts while learning the principles of CAD/CAM, and having fun doing it. Mastercam QuickPart is easy to use, and provides a path for instant success.

QuickPart takes a student step-by-step through a basic CAD/CAM application. It uses Mastercam functionality to let a student first design a part, and then create toolpaths to cut the part. From material selection, to stock size, to tool selection, a student will learn the methods involved in manufacturing with state-of-the-art CAM software.

QuickPart guides students through the process of creating simple parts by presenting them with one concept per screen. When students are able to cut parts they designed shortly after being introduced to Mastercam, they are encouraged by their progress and eager to learn more.

Extensive instructor controls allow instructors to configure the program to match their students’ needs and available resources. In addition, each QuickPart project can generate a printable detailed setup sheet showing toolpath, stock size, selected tool, and more that instructors can review before running the CNC machine.
3D Printing for Designers & Machinists

Turn Key Training Material Showing How To:

- Design the parts for a Gripper Arm in SolidWorks and Mastercam Solids
- Print the parts on a 3D Printer
- Create the G-Code for the parts using Mastercam
- Fixture and Machine the parts on a CNC Milling Machine

Training Guide Includes:

- Step by Step instructions
- Part Drawings
- Tool Lists
- Machinable Parts
- Fixturing Techniques
- Printable Parts
- Makerbot Instructions
- Video instructions
- Power Point overview for each Lesson

Material is Designed To Be Used In Any Of The Following Ways:

- Assists students preparing independently to the point where the teacher can demonstrate and/or assist in setting up the printer and/or the machine.
- In conjunction with teacher taught curriculum
- As a Hybrid model where students can prepare at home and come into the lab to do the practical application with the assistance of a teacher or support staff.
Books come with:
A DVD with Videos on how to complete each lesson in the book and Mastercam HLE Software or G-Code Simulation Software. NIMs and Mastercam Certification Test preparation.

Mastercam for X9

- **Mill & Lathe 2D/3D** - Includes importing SolidWorks, Inventor and Creo Solid Models and New High Speed Toolpaths. Comes with CD-ROM
- **4&5 Axis** - This 740 page Instructional Training Guide provides all the instructions you need to learn how to program a 4 and 5 Axis CNC Machine using Mastercam. Comes with CD-ROM
- **Wire** - This Instructional Training Guide provides all the instructions you need to learn Geometry Creation (CAD) and Toolpath Creation (CAM) for programming a CNC Wire EDM in Mastercam. Comes with CD-ROM

SolidWorks for Mastercam x7

- **Mill 2D & 3D** - These training guides provide all of the instructions needed to learn how to create solid models using SOLIDWORKS and 2.5D toolpaths using Mastercam.
- **Mill 3D** - This Training Guide provides Step-by-Step instruction for the Mastercam for SOLIDWORKS Software. Create the part model in SOLIDWORKS and use the SOLIDWORKS add-on “Mastercam for SOLIDWORKS” to complete the 3D Toolpaths without ever leaving the SOLIDWORKS environment.

CNC Programming

- **CNC Programming Workbook - Mill & Lathe** - The CNC Programming Workbook for Mill and Lathe is an excellent workbook for students learning Computer Numerical Control Programming. In addition to the material presented in the Mill and Lathe Workbook students will receive Self Guided Videos, which frees the teacher to focus on students working on machinery. Comes with CD-ROM
- **CNC Programming Teacher Kit** - The CNC Programming Teacher Kit includes Answers and Solutions to all of the exercises in the CNC Programming Mill and Lathe student workbooks. NOTE: Buy 10 or more CNC Programming Workbooks and get a Teacher Kit for Free. Comes with CD-ROM
Manufacturing relies on tools including jigs, fixtures, templates and gauges to maintain quality and production efficiency. They are used to position, hold, protect and organize components and subassemblies at all stages of the manufacturing process.

And although these tools are virtually invisible when production is running smoothly, their importance becomes evident when problems arise. To avoid production halts or product defects, new jigs and fixtures must be rapidly designed, manufactured and deployed.

Since it is quick and efficient to 3D print jigs and fixtures, companies can shift to a digital inventory concept. Rather than storing these manufacturing tools when they are not in service, simply print out jigs and fixtures as they are needed. This eliminates the time, cost and labor for tool storage and inventory control, as well as time lost trying to locate an infrequently used jig or fixture.

With Stratasys thermoplastics and photopolymers, you can quickly 3D print injection molds to evaluate prototype parts or produce low volumes of end use parts. This is especially useful to test the design, fit and function of products before mass production. If changes are required, new mold iterations can be 3D printed in just a few hours at minimal cost.
Multiple 3D printers. One ideal solution for any application. The Stratasys Design Series offers two distinct categories of prototyping solutions, depending on your exact needs:

**Precision Prototyping and Performance Prototyping Solutions for the Classroom**

Whether you are looking for the best in product realism or unsurpassed durability to withstand rigorous testing, the Design Series has a 3D printer that is right for you.

**About our technologies...**

Our Objet® 3D Printers employ patented PolyJet® technology, which works by jetting state-of-the-art photopolymer materials in ultra-thin layers onto a build tray - layer by layer - until the high-quality prototype is completed.

Our proven Fused Deposition Modeling (FDM Technology®) is the foundation for the Dimension® 3D Printers. Two materials (one for models, one for support) are heated in an extrusion head and deposited in thin layers on a modeling base. The model is precisely built, layer upon layer.
MANUFACTURING CLUSTER:
C.I.P. 48.99999 PRECISION PRODUCTION TECHNOLOGY

Artec 3D

Artec Eva 3D scanner is the ideal choice for those that need to receive a quick, textured and accurate scan. Eva doesn’t require markers or calibration. It captures objects quickly in high resolution and vibrant color, which allows for almost unlimited applications.

A go-to tool for CAD users and inventors of any kind, Artec Spider 3D scanner effectively captures the most intricate details of small objects with amazing accuracy and in brilliant color, offering almost unlimited possibilities in reverse engineering, quality control, product design and manufacturing.

DiWire is a one of a kind machine that bends lines in space. It may be a small machine, but it’s big build size ensures the only limits are your imagination!

Lighting speed, easy use, multiple material options and compact size makes this the most stylish machine in your shop. Bend lines, curves, or 2D shapes that can be soldered or clipped together to create 3D structures. DiWire integrates well with laser cutters, routers, and 3D printers to create planes & volumes. To help you assemble volumes, an assortment of printable clip and laser cut parts are available for download.
RealWeld Trainer™ offers a unique approach to welding training. It’s the first welding trainer intended for use in a welding booth - real welding training under real conditions using any brand of welding equipment. RealWeld Trainer™ technology far exceeds virtual reality welding training technologies in terms of its range of applications and impact. The patented motion capture system teaches muscle memory by measuring manual welder motions (torch angles, travel speed, contact tip to work distance (CTWD) and proximity) and welding parameters (current, voltage, wire feed speed) in real-time to identify deviations from a given welding procedure specification (WPS).

REALWELD Trainer teaches multiple welding processes in a number of welding positions (1F, 2F, 3F, 4F, 1G, 2G, 3G, lap joint, tee joint, groove joint, and flat plate joints) and prompts the user with audio coaching in both Arc On and Arc Off modes to help develop proper technique and position. Welding procedure specifications can be created and modified by the instructors as needed.

APPLICATIONS
RealWeld Trainer’s™ unique approach to welder training meets the needs of both instructors and trainees for schools, career centers, and manufacturers. RealWeld Trainer™ allows a reduction in training costs and an increase in training effectiveness with accurate real-time feedback and immediate post-weld analysis.

• **Empowered Training:** Instructors can use existing curriculum or create their own. Trainees assess their own or each other’s performance with immediate visual, auditory, and quantitative feedback allowing them to understand and reinforce proper technique.

• **Screening:** Instructors can reliably and objectively screen the skill level of in-bound trainees.

• **Recruiting:** A floor dolly provides easy transport to job sites or recruiting events that incorporate either live welding or just practice arc-off weld trials.

• **Conserving Material:** Initial torch positioning and practice runs can be performed without welding to conserve materials.

• **Workforce Development:** Data recorded on each trial allows the instructor to assess the trainee’s progress and reliably recommend trainees based on their proficiency welding to the employer’s WPS.

• **WPS Documentation Quality:** Create or enhance a WPS by capturing the technique of a master welder: A great benefit to manufacturers and a revenue opportunity for colleges and career centers.
TRAINING EQUIPMENT

Lincoln Electric offers the welding instructor and educator the right tools to bridge the manufacturing skills gap.

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 advance VRTEX system designed specifically for welding training.

VRTEX Engage includes a touch screen, monitor, welding gun, tracking device and a placemat to simulate the work surface. It’s all contained in a lightweight and highly portable carrying case that can be deployed in any setting – industrial, educational or elsewhere.

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. The VRTEX system is ideal for basic to advanced welding training, as a testing, recruitment and engagement tool for educational and industry and for preparation for advanced level evaluation for instructors. The VRTEX 360 is constantly on the move incorporating additions for your training purposes each year!

Featuring:
- Supports All Out of Position Welds
- User Machine Interaction
- Dedicated Welding Gun and Stinger
- Tabletop Coupon Stand
Robotic Education Cell 2.0
Lincoln Electric® offers advanced manufacturing training solutions. With automated welding transforming manufacturing today, our complete offering of robotic welding training solutions focus on enhancing the ability to train students on robotic programming and welding techniques and skills. Our goal is to help welding, robotic and manufacturing technology instructors and students to develop the skills necessary to thrive in an advanced manufacturing environment.

Ideal For:
- Training and demonstration in a lab, classroom, or recruitment event
- Technical training at universities
- Trade schools
- Workforce development programs

VRTEX® Mobile Virtual Welding Trainer
The VRTEX® Mobile is a basic, entry level welding training system. It is 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 for educational and industry and for employment and screening for human resources or as an evaluation tool for instructors and educators to get a baseline on student knowledge.

Lessons in Arc Welding Curriculum for the VRTEX®
Lincoln Electric is pleased to introduce the New Lessons in Arc Welding Curriculum for the VRTEX®. Based on AWS EG 2.0 (Guide for the Training of Welding Personnel: Level – Entry Welder), the Lessons in Arc Welding Curriculum for the VRTEX® is designed to offer an enhanced method of learning using traditional welding training projects and virtual reality welding projects. Instructors have the flexibility to implement the curriculum in their lesson and training programs.
FANUC’s CERT
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

The NEW FANUC LR Mate 200iD/4S FENCELESS CERT Cart was developed from combining FANUC DCS Position and Speed Check software with an Allen-Bradley SafeZone Mini Safety Laser Scanner. The result is FANUC’s NEW FENCELESS Cart that will still fit through a standard door and runs off 110V power. The FENCELESS cart allows a greater work envelope and introduces students to the latest in integrated safety products from FANUC and Allen-Bradley.
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.
Amatrol’s NIMS CNC Operator Certification

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 (National Institute for Metalworking Skills) 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.
The Autolab II provides the following:

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

ConsuLab’s Automotive training products have the finest quality materials and are built with professional workmanship resulting in what are recognized as the best training tools available to schools and industry today.

Our line of automotive system trainers provide a full range of products designed to assist instructors and students learning the complex and constantly evolving technology used in today’s vehicles.

Our products range from basic principles to complex new technological evolutions and comply with NATEF, ASE, AYES, Alberta and Red Seal curriculum requirements.

A significant part of our Automotive products involve using OEM components that schools often supply to us to build custom designed trainers to fit their individual needs.

- Engine Repair
- Engine Performance
- Brakes
- Suspension & Steering
- Electrical / Electronic Systems
- Automatic Transmission / Transaxle
- Manual Drive Train & Axles
- HVAC
- Hybrid
- Cutaways
- Custom
Heavy Duty Diesel

ConsuLab’s Heavy Duty Diesel training products have the finest quality materials and are built with professional workmanship resulting in what are recognized as the best training tools available to schools and industry today. Our line of Heavy Duty diesel system trainers provide a full range of products designed to assist instructors and students learning the complex and constantly evolving technology used in today’s medium to heavy duty vehicles and off-road equipment.

Our training products include Engines (with and without exhaust after-treatment systems), Electrical, Hydraulics and Airbrakes. ConsuLab is proud to be an OEM supplier of Cummins, John Deere and Caterpillar engines. Our training products and support materials are designed to supplement with NATEF, ASE, Alberta, RED SEAL and US Military training curriculums.

- Diesel Benches
- Diesel Engines
- Diesel Components
- Brakes
- Electrical / Electronics
- Drive Train
- HVAC
- Hydraulics & Pneumatics

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SimLog - 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
SimSpray

SimSpray is an immersive virtual reality painting simulation. Designed to augment traditional educational methods, it assists in the teaching of spray painting and coating fundamentals.

Using SimSpray saves on training time and decreases expenses, delivering a “Green” ROI to training organizations.

SimSpray Features:

- Experience realistic 3D stereoscopic spray paint simulation
- Learn correct body positioning, movement for proper painting and coating techniques
- Reinforce proper equipment setup
- Paint entire parts with primer, color, and clear coats
- See visual defects including:
  - Dry spray
  - Orange peel
  - Drips/sags
- Accelerate learning through innovative scoring and feedback
- Spray paint with a proprietary gun that includes:
  - Working fan pattern and fluid adjustment knobs, with horizontal or vertical spray cone orientation
  - Two-part trigger
  - Haptic feedback
Maintaining & Repairing Personal Computers

A+ Certification

The Marcraft program makes certification easy and affordable. Be assured, each Marcraft edition tracks to the most current A+ objectives. The 6th edition of Maintaining & Repairing PCs is a superbly written and colorfully illustrated hardback text with an accompanying lab guide.

Featuring exclusive real-life case studies submitted by actual agents of the Geek Squad™, the Marcraft program covers all of the latest competencies:

- 220-701 Essentials
- 220-702 Practical Applications

It is hands-on and contains 44 universal lab exercises covering practical theory, troubleshooting, diagnostic and research techniques. It is also available as a complete online course.

Install • Configure • Troubleshoot

Network+ Certification

The 2009 CompTIA Network+ Certification program is the logical next step from the A+ Certification...and a path for entering directly into a networking career.

Marcraft is a cornerstone partner of the CompTIA Network+ program along with 24 other companies like Microsoft®, Apple®, HP®, and Intel®.

Network+ recognizes a technician’s ability to describe the features and functions of networking components and to install, configure and troubleshoot basic networking hardware, protocols and services.

Network+ certified professionals work in a variety of IT roles, including network administrators, network technicians, network installers, help desk technicians, and IT cable installers.

The Marcraft Network+ Training program, currently in it’s 4th edition, includes an expertly written and illustrated theory text with an accompanying hands-on lab guide.

Cyber Security

In today’s Global IT environment, Cyber Security goes well beyond traditional network security.

Based on the National Institute of Standards and Technology’s (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

Prepares students to challenge ISACA Cybersecurity Fundamentals Certificate Exam!
The Allegheny Educational Systems Difference

For new construction and renovation projects, Allegheny Educational Systems combines a clear vision of your goals with our professional consulting, planning, implementation and support services, to maximize your educational results:

**Consulting**
Before the space planning begins, our staff will meet with you to understand your educational 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 administrators, faculty, 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.
Allegheny Educational Systems has provided Technology Educators with the highest quality products and after-sale support for over 35 years.

Our services include lab layout & design, curriculum implementation, installation and training for all products that we offer.

Allegheny Educational is your #1 STEM & Maker Space Resource!

3D Printers and 3D Scanners • Laser Engravers/Cutters • CNC Routers/Mills/Plasma • CAD/CAM/CNC Software • Installation, Training & Support

State Contract Pricing Available!

Allegheny Educational Systems has provided Technology Educators with the highest quality products and after-sale support for over 35 years.

Our services include lab layout & design, curriculum implementation, installation and training for all products that we offer.

FREE Fab Lab Planning Guide!

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