CAREER & TECHNICAL EDUCATION
PRODUCT & CERTIFICATIONS GUIDE

Allegheny
Educational Systems, Inc.
800-232-7600
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.

Allegheny’s team of factory trained technicians and sales consultants worked with LCCC (Lehigh-Carbon Community College) to design and install the new Mechatronics and Robotics Apprenticeship lab space as well as train and support the instructors as the program came on board.
## CAREER CLUSTERS and CIP CODES

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*Certifications associated with these products*
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.

Residential Heat Pump Troubleshooting Learning System

Amatrol's Residential Heat Pump Training System (T7100) teaches the critical hands-on skills HVACR technicians need to succeed when working with residential HVAC systems that use a heat pump and traditional ducting. Learners will work with real equipment, such as: a heat pump condenser, heat pump air handler, Wi-Fi enabled thermostat, fuse box, ducting, and manifold.

Residential Mini-Split Heat Pump Learning System

Amatrol’s Residential Mini-Split Heat Pump Learning System (T7130) teaches the critical hands-on skills HVACR technicians need to succeed when working with residential ductless (“mini-split”) HVAC systems. Learners will work with real equipment, such as: a heat pump condenser, evaporator unit, thermostat, panel-mounted gauges, and condensate pump.
DAC Worldwide’s HVAC cutaways feature real industrial components that have been restored and sectioned to expose key internal components and their functionality.

Open Drive Refrigeration Compressor

Hermetic Compressor

Ceiling Unit Cooler System

R-134a Refrigerant Recovery & Charging Training System

Amatrol’s Refrigerant Recovery and Charging Learning System for R-134a (T7031) teaches aspiring HVAC/R technicians the critical hands-on skills they need to succeed on the job. Learners will work with real equipment, such as: a recovery machine, manifold gauges, submersible cooler, temperature probe, filter dryer, low side liquid charger, vacuum pump, and micron vacuum gauge.

In addition to developing hands-on skills with real equipment, learners will use Amatrol’s interactive multimedia eLearning curriculum to cover a wide variety of relevant refrigerant recovery and charging topics, including: refrigerant fundamentals, leak detection, pressure and temperature measurement, refrigerant recovery and recycling, and refrigerant charging.

R-410a Refrigerant Recovery & Charging Training System

Amatrol’s Refrigerant Recovery and Charging Learning System for R-410a (T7032) teaches aspiring HVACR technicians the critical hands-on skills they need to succeed on the job. Learners will work with real equipment, such as: a recovery machine, manifold gauges, submersible cooler, temperature probe, filter dryer, liquid vaporizer, low side liquid charger, vacuum pump, and micron vacuum gauge.

In addition to developing hands-on skills with real equipment, learners will use Amatrol’s interactive multimedia eLearning curriculum to cover a wide variety of relevant refrigerant recovery and charging topics, including: refrigerant fundamentals, leak detection, pressure and temperature measurement, refrigerant recovery and recycling, and refrigerant charging.

HVAC Cutaways

DAC Worldwide’s HVAC cutaways feature real industrial components that have been restored and sectioned to expose key internal components and their functionality.
Architectural & Construction Cluster:
C.I.P. 47.0201 HVAC Maintenance Technology/Technician

iConnect Training Systems produces the finest HVAC/R training units for the educational market. 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-805 - Mobile Table-Top Air Conditioning and Refrigeration Trainer**

This training unit demonstrates basic refrigeration and air conditioning principles in a compact size perfect for in the classroom or mobile training.

*Training Curriculum, Workbooks, & Certification available soon!*

**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 snapshot 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.

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The F123 Series

Precision printing. As easy as F123.

The award winning Stratasys F123 Series is easy to operate and maintain, whatever your level of experience. The F123 series combines powerful FDM technology with design-to-print GrabCAD software for the most versatile and intelligent solution available. Produce highly accurate, reliable prototypes, student projects, production parts and more. Do it all without the need for dedicated expert staffing. And share it across classrooms, campuses and a variety of your academic programs.

F123 Series features:

- **Minimal Setup** - simply plug and print. Give your entire workgroup access to professional industrial grade 3D printing.
- **Non-stop printing** - spend less time troubleshooting and more time getting results.
- **Fast and easy material swaps** - maximize your team's productivity.
- **Smart software** - GrabCAD Print™ software simplifies the entire 3D printing process with an intuitive CAD-like application anyone can use.
- **Print up to five different materials** - The F120 supports ABS-M30 and ASA; the F170 and F270 models support PLA, ABS-M30, ASA and TPU 92A* materials; the F370 supports PLA, ABS-M30, ASA, PC-ABS and TPU 92A* materials. (PLA uses breakaway support only.)
- **All-new fast-draft mode** - prints twice as fast as standard build mode while consuming just a third of the material on average.

*TPU 92A is standard on F370, and as an optional upgrade on F170 and F270.
Ultimaker

Ultimaker 3D Printers
Fueling innovation-driven education

Ultimaker's products and solutions encourage students to address real-world problems, regardless of the grade level. It's Ultimaker's goal to set the engineers, artists, and designers of the future on the right path, and to support their learning along the way. Ultimaker 3D printing solutions are the perfect accompaniment to developing key skills in science, technology, engineering, art, and math (STEAM).

Ultimaker S5
The Ultimaker S5 combines dual extrusion, advanced connectivity, and an open filament system with a large build volume for a classroom-friendly 3D printer, offering unrivaled quality and reliability at scale.

Ultimaker S3
The Ultimaker S3 is a dual extrusion 3D printer that delivers high-quality, composite-ready performance—in a smaller footprint. Packed with Ultimakers latest technology, the Ultimaker S3 is as easy to use as it is powerful, offering the most cost-effective way to adopt in-house 3D printing.

Creaform 3D Scanners

Discover Creaform ACADEMIA, a brand-new solution suite for teachers looking to educate and inspire using metrology. Addressing the inherent realities of the academic world, it fosters experienced-based learning and development using tools widely used in Industry 4.0, allowing you to enhance your curricula and better prepare students for their careers ahead.

The solution suite includes the Creaform professional-grade ACADEMIA 3D scanner, free application software, and complimentary add-ons tailored to get you started with industrial 3D measurement technologies. Achieve the highest level of quality teaching possible—all while taking advantage of the latest innovations on the market and not breaking the bank with Creaform ACADEMIA.
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.

A Full Product Line to Meet Your Needs:
- Epilog Zing 16 and Zing 24
- Epilog Fusion Edge 12
- Epilog Fusion Edge 24
- Epilog Fusion Pro 32
- Epilog Fusion Pro 48

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.

Roland Offers a Wide Selection of Cutters:
- CAMM-1 GR Series Large Format Cutters
- GS-24 Desktop Cutter
- STIKA Desktop Design Cutter
Flatbed Printers

**VersaUV® LEF UV Desktop Flatbed Printers**
The LEF Series UV Flatbed Printers offer students countless customization and printing possibilities. They enable direct printing on a wide range of materials that include metal, glass, wood and canvas. White ink and Clear ink options allow for special embossed finishes. Available in 30"x13", 20"x13" and 12"x11" sizes.

Printers and Cutters

**VersaStudio BN-20 Desktop Printer/Cutter**
One compact device for apparel, packaging, posters and more - features 8-channel printheads for outstanding photographic and vector output.

**TrueVis SG2 Series Printer/Cutters**
Designed for both novice and advanced users, the new TrueVis SG2 series printer/cutters offer all the quality and versatility of a Roland, at an unbeatable price. Available in 30", 54" and 64" models.

Dye-Sublimation Printers

**Texart XT-640 and Texart RT-640 Dye-Sublimation Printers**
Sportswear, fashion, decor, Point-of-Sale (POS) displays, tradeshow exhibits and a wide range of promotional products are just a few of the many opportunities available in dye sublimation printing. The Roland Texart dye-sublimation printers were designed to provide superb quality, productivity and value with ease of use.

**Roland Project Based Learning**
The Ready-to-Teach and Easy-to-Learn Solution
Roland's step-by-step tutorials work seamlessly with Roland software and machines, making it easy for educators to teach and for students to learn design and engineering skills.

**Project Based Learning modules are available for:**
Vinyl Cutting with GS-24  •  Print & Cut with BN-20 or SG Series
UV Printing with LEF Series  •  3D Milling with MDX / SRM Series Mills
Forest Scientific Corporation

Forest Scientific Corporation manufactures high-quality CNC Routers, Mills & Lathes, and Plasma Cutters that are the perfect choice for your school. Made right here in the USA and made to last, each machine has precision THK linear ways and bearings to ensure stability; welded steel frames and structural aluminum to ensure alignment over time; and powerful stepper & servo motors to increase reliability and high resolution on each pass.

They are designed to be updated inexpensively as technology changes and all machines use industry standard Fanuc-style G&M codes from CAM packages such as Mastercam, Surfcam, Edgecam, Vcarve, Fusion 360, SolidWorksCam and more.

To ensure that you have successful results, Forest Scientific offers on-site training as well as Project Based Learning curriculum and tutorials with written and video modalities for teachers and students.

Invest with confidence knowing that you have purchased a Forest Scientific CNC system that is of high quality, well supported, and ensures your success in teaching marketable skills.

Available products include:

- **FabBot Series Routers and Plasma Cutters** - Created for home shops and schools on a very limited budget
- **Convert-A-Table Plasma Cutter/Routers** - Easily changes from a CNC Router to a CNC Plasma Cutter
- **Maker-Fab Series Routers and Plasma Cutters** - Cost effective, heavy duty machines
- **HS Series Router and Plasma Cutters** - Standard model for education and small shop
- **The Michaelangelo 3D Modeler** - Innovative CNC Router designed for classroom use
- **The LuthierMax Series Guitar Making CNC Routers** - Designed in collaboration with engineers from Fender Guitars and www.guitarbuilding.org
- **The Mitey Series** - Machines for educational training, prototyping, design, and production worldwide
Amatrol – 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 – 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

**Smart Factory**
- Robotics
- PLC’s
- Mechatronics

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MSSC – Manufacturing Skills Standards Council
Certifying the Industrial Athlete of the Future

The Manufacturing Skill Standards Council, a 501(c)3 non-profit, is an industry-led training, assessment and certification system focused on the core skills and knowledge needed by the nation’s front-line production and material handling workers. The nationwide MSSC System, based upon industry-defined and federally-endorsed standards, offers both entry-level and incumbent workers the opportunity to demonstrate that they have acquired the skills increasingly needed in the technology-intensive jobs of the 21st century.

Amatrol – Skill Boss
Performance-Based Assessment & Hands-On Training

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

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

Allegheny Educational Systems provides the MSSC Student eLearning Curriculum and Instructor Authorization Training for the following certifications:

Certified Production Technician (CPT 4.0):
• Safety
• Quality Practices & Measurement
• Manufacturing Processes & Production
• Maintenance Awareness
• Green Production

Certified Logistics Technician (CLT):
• Foundational-Level Associate Certificate (CLA)
• Mid-Level Technical Certification (CLT)
Amatrol Skill Boss Logistics
Supply Chain Automation Training & Assessment

Amatrol’s Skill Boss Logistics offers performance-based assessment for evaluating the skill levels and competencies of future supply chain automation technicians.

This system is a working automated distribution system that performs real-world operations, such as package tracking, automatic package queuing and priority release, electro-pneumatic sorting and much more!

Required for three of MSSC’s Certified Technician Supply Chain Automation (CT-SCA) certifications:

• Equipment Maintenance (CTSCA-EM)
• Equipment Repair (CTSCA-ER)
• Network Repair (CTSCA-NR).

MSSC Supply Chain Certifications
Certified Technician - Supply Chain Automation (CT-SCA)

The MSSC’s CT-SCA Certification is a nationally portable, industry-led, training and certification system developed through a partnership with the National Center for Supply Chain Automation (NCSCA), Material Handling Industry (MHI), Material Handling Distributors Association (MHEDA), Amatrol, and NOCTI Business Solutions.

It will enable both students and incumbent workers to gain the skills needed to meet the definition of a supply chain automation technician: a technician who installs, operates, supports, upgrades, or maintains the automated material handling equipment and systems which support the supply chain. This program will enable certificants to earn the 3 prestigious industry recognized certifications mentioned above.

Key benefits to offering the MSSC certifications to students and employees include:

• Availability nationwide
• Nationally accredited
• Federally recognized
• Always up to date
• Time and cost-effective for students
• Articulates between high schools and colleges
• Easily integrated into apprenticeship and internships
• Customizable at the community level
• Improved employee performance and retention
• Reduced recruitment and training costs

MSSC Logistics Certifications
Certified Logistics Associate and Technician (CLA & CLT)

The purpose of the Certified Logistics Technician (CLT) certification program is to recognize through certification, individuals who demonstrate mastery of the core competencies of material handling at the front-line (entry-level to front-line supervisor) through successful completion of the certification assessments. The goal of the CLT certification program is to raise the level of performance both to assist the individuals in finding higher-wage jobs and to help employers ensure their workforce increases the company's productivity and competitiveness.

The CLT program consists of two parts:

• Foundational-Level Certified Logistics Associate (CLA) Certificate
• Mid-Level Technical CLT Certification (CLT)
Addressing the Critical Need for Skilled Maintenance Technicians, NIMS has Created Nine Stackable Certifications in Industrial Technology Maintenance (ITM)

Industrial Technology Maintenance Certifications
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 System
- **Duty Area 8** Maintenance Welding
- **Duty Area 9** Maintenance Piping

Credentialing Requires Theory & Hands-On Assessments

Amatrol's eLearning Suite was developed specifically to support and align with all nine areas of the NIMS ITM Certification
SACA's Smart Automation Certifications use a modular structure to enable them to fit a wide range of individual needs, industries, and educational environments. The SACA "Micro-Certifications" provide high school and C.T.E. students the ability to achieve industry recognized credentials before they graduate.

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

### Smart Automation Certifications - Industry 4.0

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**Top 5 Future Smart Automation Careers in Manufacturing**

- [Can Smart Manufacturing Transform the Food Industry?](#)
IGNITE Mastering Manufacturing

Mastering the Concepts of Industry 4.0 & Advanced Materials for the Next Generation Careers

Advanced materials, the Industrial Internet of Things (IIoT) and other Industry 4.0 technologies have created many new and exciting career opportunities but also require a new set of knowledge and abilities. Individuals in today's world must possess state-of-the-art technical skills, systems optimization skills, and employability skills such as teamwork.

IGNITE's innovative curriculum supports a modular 6-course Advanced Manufacturing program with additional Material Science activities. Each course can be completed in one semester, providing flexibility for 1-, 2-, or 3-year programs.

All IGNITE courses include stimulating interactive eLearning lessons, computer simulations, design projects, and hands-on workstations using Industry 4.0 technologies.

Course 1
Introduction to Advanced Manufacturing

Course 2
Introduction to Systems
Projects applying team concepts and problem solving to basic systems. Expands on Course 1 technical topics in Smart Automation.

Course 3
Mechatronic Systems
Projects in mechatronic systems combining computer-based controllers with electrical, mechanical, and fluid technologies. Introduces Programmable Controller (PLC) programming and applications.

Course 4
Digital Manufacturing Systems
Projects in Digital Enterprise Systems combining PLCs, Robotics, and Cloud Technologies. Introduces Networking, CAM, Cloud-Based Data Collection, and Lean Manufacturing.

Course 5
Advanced Materials & Design
Advanced team project deepens technical skills in advanced manufacturing processes, materials, and design. Features CAD/CAM, CNC, welding, plastics, and materials engineering.

Course 6
IIoT, Data Analytics & Networking
Capstone course that enriches technical skills in Industry 4.0 systems and the Industrial Internet of Things using managed networks, data analytics software, cybersecurity, variable frequency drives, RFID, barcode, and smart sensors.

IGNITE was developed in collaboration with three Manufacturing USA Institutes (LIFT, America Makes, and MxD) and funded in part by the U.S. Department of Defense.
Amatrol – Smart Factory

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 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.

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.

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.
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
Amatrol’s NIMS
CNC Operator Certification

Amatrol’s CNC Machine Operator program offers a virtual CNC machine experience that allows learners to practice and develop the required skills for operating a CNC machine via the computer. Learners gain CNC training through hands-on engagement via a virtual platform that acts like a real CNC machine. If a learner forgets to turn the power on, they must figure out the problem as they would on a real machine.

Amatrol’s Turn-Key Program Includes:
• 24 Self-Paced Learning Units
• 130+ Skills, 80+ Hours of Learning
• Instructor’s Assessment Guide
• On-The-Job-Training Guide

Amatrol’s eLearning courses incorporate multiple elements, such as text, animations, narration, videos, and interactive exercises and quizzes, to engage learners with different learning styles.

National Institute for Metalworking Skills (NIMS) has developed two popular CNC machine operator certifications, CNC Mill Operations and CNC Lathe Operations. NIMS credentials are portable recommendations that are nationally recognized and industry validated.

The NIMS CNC Mill and Lathe Operations certifications cover all of the following key skill areas:
• CNC mill, lathe, and grinder set-up and operation
• Tool identification, set-up, use, and maintenance
• Machining processes
• Statistical process control
• Quality and cycle time optimization
• CNC program operation
• Fixture set-up and operation
• CNC troubleshooting and maintenance for operators
• Precision measurement & gauging
• Print reading
• Geometric dimensioning and tolerancing

Amatrol also offers instructor training through their Amatrol Technical Training Institute.
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!).

Mastercam delivers CAD/CAM software tools for all types of programming, from the most basic to the extremely complex. 2-axis machining, multi-axis 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. The Educational Division continually provides exceptional teacher training and educator support. Years of experience in the educational market has helped Mastercam to understand the specific needs of instructors, schools, and students. Since Mastercam is the most widely used CAM software in the world, the 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.

Vectric software is designed to make cutting parts on a CNC an enjoyable and productive experience, the combination of power and simplicity lets you efficiently generate or manage your design, then quickly create precise toolpaths to drive your CNC.

**Products Include:**
- **Cut2D** - Vector drawing & editing tools for CNC routing, milling & engraving
- **VCarve** - Complete software solution for cutting on a CNC Router
- **Aspire** - Draw & build 3D component models for machining
- **Cut3D** - Converts 3D models into CNC toolpaths
- **PhotoVCarve** - Converts photos and images into high quality toolpaths for CNC and engraving machines
Formlabs SLA 3D Printers
Engineered for precision. Designed for reliability.

Formlabs SLA 3D Printers are desktop stereolithography (SLA) 3D printers ideal for applications such as product design, manufacturing, dental, healthcare, education, entertainment, jewelry, and more. Formlabs printers have been engineered for precision and designed for reliability - offering industrial output at a desktop price. They are extremely versatile with a wide array of photopolymer resins for a full variety of applications and possibilities.

**Form 3**
*Flawless Prints, Every Time*

The Form 3 LFS (Low Force Stereolithography) 3D printing balances detail and speed, while the optical system maintains a precise, dense laser spot to ensure accurate, repeatable prints. Easy clean-up and smoother parts with tear-away light-touch supports.

- **Build Volume:** 5.7 x 5.7 x 7.3 in
- **Laser Power:** 1x 250 mW laser

**Form 3L**
*Bring Large Format 3D Printing In-House*

Blaze through large parts with two custom-designed Light Processing Units (LPUs). Two lasers simultaneously build large, dense parts fast. Use two of the same resin cartridges that are used by Form 2 and 3 to go longer without running out of resin. Switch seamlessly between 20+ general purpose and specialty resins with the cross-compatible cartridge system.

- **Build Volume:** 13.2 x 7.9 x 11.8 in
- **Laser Power:** 2x 250 mW laser

**Small Details, Big Results**

Eliminate the turnaround time of outsourcing of the manual work of assembly for large scale 3D prints. The Form 3L offers a massive build volume at an unprecedented value.
A new wave of independent manufacturing and prototyping starts now with the Fuse 1. Bring production-ready nylon 3D printing onto your benchtop with an affordable, compact selective laser sintering (SLS) platform.

**Fuse 1 3D Printer 120V/230V**

Bring production-ready nylon 3D printing onto your benchtop with an affordable, compact selective laser sintering (SLS) platform. The Fuse 1 delivers industrial power in a small footprint with effective powder containment and easy setup. From print setup to powder recovery, our easy-to-use hardware and software are designed to maximize your efficiency at every step of the process.

Formlabs **Nylon 12 Powder** has been specifically developed for use on the Fuse 1 and is highly capable material ideal for both functional prototyping and end-use production of complex assemblies and durable parts with high environmental stability.

**Fuse Sift 120V/320V**

The Fuse Sift is a safe, efficient powder recovery system for the Fuse 1 3D printer. This easy-to-use, all-in-one station combines part extraction, powder recovery, storage, and mixing in a single free-standing device, for the most functionality in a single device available on the SLS market.

**Industrial Vacuum 120V/320V**

The Fuse Sift powder recovery station incorporates an external vacuum, sold separately, to help you efficiently, safely maintain a clean workspace. The integrated hose and controls allow you to easily tidy up your workspace, clean off a build chamber, or remove debris from the sifter mesh.
Studio System 2
Office-friendly metal 3D printing in just 2 steps – Print. Sinter.

Making complex, high-performance metal parts has never been easier. Featuring a breakthrough two-step process, next-generation Separable Supports, and a software-controlled workflow, the Studio System 2 makes it simpler than ever to produce custom metal parts.

With a simplified, two-step process that eliminates the need for solvent debinders, The Studio System 2 packs all the benefits of the original Studio System – no hazardous metal powders or lasers, no dedicated operators, no special facility needs – into a package that’s more accessible than ever before and that produces even higher-quality parts.

Along with new material formulations developed for improved surface finish, the Studio System 2 features new print and sinter profiles that automate complicated printing and metallurgical processes. User-friendly hardware – including an easy-to-use sintering furnace, fully accessible printer and sintering volume, and a configurable furnace retort – allows teams to spend less time managing equipment and more time designing and fabricating parts.
MANUFACTURING CLUSTER:
C.I.P. 48.0501 MACHINE TOOL TECHNOLOGY/TECHNOLOGIST

WAZER
The First Desktop Waterjet

Bring professional-grade fabrication to your workshop with WAZER, the first desktop waterjet. Wazer’s compact size fits into any work space and is ideal for cutting on-demand custom parts. Cut metal, glass, ceramic, composite, plastic and rubber safely and quickly. Wazer operates without heat or fumes – there’s no need for ventilation. Simply connect your Wazer to standard electricity, water source and drain and you’re ready to cut.

Go from design to cutting, fast.

WAZER’s web-based software is fast and easy. Wazer operates with an online file prep tool called WAM. Load your design file into WAM and prepare your cut in minutes.

ProtoMAX
Waterjet Cutting System

Built by OMAX, the largest waterjet manufacturer in the US, the ProtoMAX waterjet is incredibly reliable. Advanced waterjet software coupled with 30,000 psi pump pressure drives the most efficient waterjet cutting tool for its size. Metal, glass, plastic, wood and more, the ProtoMAX cuts material under 1 in. thick with a 12 in. by 12 in. cutting area. Ideal for light commercial applications, DIY makerspaces, and educational institutions where cutting time matters.

Designed To Fit In Your Space

The ProtoMAX unit integrates both the cutting components and pump into a compact footprint making it ideal for small machine shops, personal workspaces and classroom style workshops. Casters allow for easy movement. With the clamshell cover and submerged cutting, ProtoMAX is a safe and quiet (approx. 76 db) iteration of a light industrial abrasive waterjet.
Forest Scientific HS Series Plasma Models

Forest Scientific Corporation HS-Series Plasma Cutters are heavier duty machines made with a larger tubular welded steel frame with integrated Water Table. The extra rigidity is great for handling the abuse of students and will stand the test of time with 24/7 commercial use. It’s Closed Loop Hybrid Servo Control assures accuracy at the fastest speeds.

Available models:
HSPB 24” x 24”  HSPB 48” x 24”  HSPB 48” x 48”
HSPB 48” x 96”  HSPB 60” x 120”

Forest Scientific CRP Clean Room Metal Torch

The Forest Scientific Corporation CRP Clean Room Metal Torch is perfect for Engineering Labs as well as Clean Rooms and is a cost effective alternative to laser and waterjet cutting. The CRP cuts steel, aluminum, copper and brass and is capable of near laser quality fine cutting up to 1/4” steel. It is also able to cut up to 5/8” steel as well as perform low resolution metal marking.

Featuring:
• Closed-Loop Hybrid Servo Control System
• Downdraft grid table and ports to exhaust fumes outside or to a filtration system
• Automatic torch height
• Automatic voltage detection, current set from computer
• Includes fine marking and standard cutting consumables

Model  Travel
CRP2418  24” X 18” Y
CRP3618  36” X 18” Y
CRP48X24  48” X 24” Y

Optional in room filtration system
Optional ultra quiet dry air compressor
Miller AugmentedArc®
Augmented Reality Welding System

The industry's most realistic welding simulation solution for classroom training. For beginner to advanced-level weld students, the AugmentedArc system simulates multiple welding processes, blending real-world and computer-generated images into a unique, augmented reality environment.

**Teacher software** is a user-friendly and flexible learning management system (LMS) that allows instructors to manage courses, content and students, and maximizes the usefulness of AugmentedArc welding simulators.

**Create and manage your own welding curriculum**
- Create quizzes, theory and welding simulation exercises
- Use pre-developed exercises or fully customize your own exercise parameters, technique and scoring criteria
- Offline mode allows you to manage the content from anywhere

**Manage student progress**
- Review the complete history and detailed results of student activities
- View real-time results of welding simulations
- View statistics and download reports for individual students or entire class

**Comes complete with:**
- AugmentedArc simulator
- Teacher software
- Black Infinity™ AR helmet with premium headgear AugmentedArc router
- MIG gun with AR nozzle
- SMAW stinger
- TIG torch with AR nozzle
- Two electrode/filler rods with AR tips
- Work stand for out-of-position applications
- Five workpieces: t-joint, butt joint, lap joint, pipe-to-plate and butt pipe

**Optimize instructor efficiency** by using the Teacher software to create a virtual classroom with customized curriculum, quizzes and weld exercises.

**Reduce overall training time** compared to traditional methods, with the realistic live arc welding simulation of the AugmentedArc.

**Real-time feedback** is provided on users’ technique to help correct errors. Reinforce proper welding practices and accelerate skill advancement prior to actual live arc welding in a lab.

**Minimize material cost** by saving wire, gas and workpieces in this simulation environment allowing students to define their welding skills before beginning live arc welding.

**Build a larger, more-skilled welding workforce** when computer-savvy individuals are drawn to welding education programs that increase their success with live arc welding.

NEW!

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Miller LiveArc™
Welding Performance Management System
for GMAW, FCAW & SMAW Applications

A Reality-Based Solution - Weld operators benefit from both weld simulations and the incomparable real-world experience of live arc welding. In both modes, LiveArc provides instant, valuable feedback on welding technique to quickly help build skills and correct muscle memory.

Guided by an easy-to-understand interface with graphical icons and instructional pop-ups, users find navigation intuitive with a quick learning curve. The system offers easy selection of assignments and review of Welding Procedure Specifications (WPS), including proper material selection and preparation, correct power source and wire feeder settings and target welding technique parameter values. After completion of an assignment, the interface delivers detailed feedback on the operator’s technique.

Features Include:

**Instructor Interface** - Assignments can be quickly configured and customized with target values and limits for work angle, travel angle, travel speed, contact-tip-to-work distance (CTWD) and aim. Data is captured so individual weld operator’s performance can be stored, retrieved and reviewed at any time to monitor ongoing development.

**Welding Positioning Arm** - Allows completion of out-of-position welding exercises, with calibration, motion tracking and feedback occurring in the same way as table top exercises.

**Industrial-Quality Construction** - Built to withstand heavy use, the LiveArc system includes a widescreen HD monitor and powerful industrial computer with solid-state technology and filterless, fanless cooling. The rugged ArcStation base features a 1/2-inch reversible steel table that allows flexible coupon placement; it ships complete with drawers, gun holder, quick-release clamps and heavy-duty casters for mobility.

**Better Training, Faster Results, More Cost Effective** - The Miller LiveArc system gives weld operators a superior training experience, delivering immediate, objective feedback in both simulations and live arc welding. Intuitive and easy to use with minimal supervision, LiveArc gets operators welding faster while saving money on supplies, helping instructors deliver more-effective and efficient lessons, and offering the peace of mind of the Miller True Blue Warranty.
Miller OpenBook™
Learning Management Software
FREE, interactive online training resources, educational materials and tracking tools

OpenBook™ is a software application or Web-based technology used to plan, implement, and assess learning processes. OpenBook™ provides Welding instructors with an easy tool to assign and deliver welding content, create quizzes, download welding labs, monitor student participation, assess and report student progress and performance. Did we mention it’s FREE!

FREE TEACHING MATERIAL
Ideal for high school and post-secondary welding programs
(Aligns with Miller Books available for FREE on iTunes)

Customize Your Classroom
Implement materials that fit your curriculum and learning objectives.

- OpenBook includes:
  - Over 70 e-Learning modules
  - Weld lab activities compatible with Miller AugmentedArc
  - Course, Quiz and Lab Builders
  - Reports and tracking of student progress
  - Customizable Certificates of Completion
  - Miller & Hobart Pre-Defined Courses with Certificates of Completion
  - Track individual student progress
  - All materials align with AWS SENSE Standards

Motivate & Engage Students

- Interactive, stimulating learning includes videos and activities
- Quick, digestible segments
- Mobile friendly
  - Easy to access homework from anywhere
  - Students can check grades and status
- Certificate of achievement awarded from Miller and Hobart for pre-curated courses.
Advanced Training Systems (ATS) Driver Training Simulators

ATS Virtual Reality Simulator driver training puts the student in control of the vehicle by putting him or her through almost every scenario the road has to offer. It even measures the student’s stress level while training which, at the end of the day, amounts to safer CDLs carrying the freight of the country.

Using technology derived from the aerospace industry, ATS VR Simulator driver training is designed to function as a component of Quadrant Training Methodology which includes classroom, computer-based and simulator training in addition to training in a real truck. All are necessary to properly train vocational operators.

ATS VR Simulator training allows the student to be trained without danger to themself, their instructor, or other vehicles on the road. Risky functions such as a front tire blowout, ice, wind, objects entering the roadway can be taught in a simulator, helping to safely develop the muscle and brain memory through repetition that is far too expensive to accomplish in a real truck.

Available Simulators include:

- **Shiftmaster** - a Specific Task simulator that trains the student to properly master the shifting requirements of a truck that has a manual transmission. Shifting in large trucks is far more difficult than one would find in an automobile that has a manual shift transmission. The simulator system allows the student to be trained by the system without the need for an instructor.

- **Transmaster and Transmaster Duo** - the standard by which simulation platforms are judged, the Transmaster incorporates various aspects of any heavy truck model. Optioned to incorporate both passive-resistance and force-feedback steering along with exclusive classroom based content to effectively and constantly train tomorrows CDL Drivers.

- **Fleetmaster** - provides true-to-life driving environments in a high-fidelity simulator platform, customizable to commercial transportation vehicles, motor coaches, heavy equipment, rural transit and military applications.
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 student’s 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
Simlog Reach Truck Simulators
Personal Simulator for “Narrow Aisle” Reach Lift Truck

Simlog’s Reach Truck Simulators put students at the controls of a typical stand-up “Narrow Aisle” lift truck with scissors-like pantograph to extend and retract the forks. Training scenarios are typical of warehouses and distribution centers where racking systems are tall and close together to increase storage density.

Simulation includes:
• 7 simulation Modules of increasing difficulty such as slalom driving forwards and backwards, selective pallet racks with standard aisles, narrow aisles, mixed and low shelves
• Automatic Performance Measurement of students work
• Objective simulation results covering 47 performance indicators including driving speeds, mast angles and orientation errors at pickup, etc.

Available with single or multiple screen displays for increased realism. Students work from a standing position – just like in the cabins of real reach lift trucks.

Simlog Forklift Personal Simulator
Personal Simulator for “Sit-Down” Forklift Truck

Simlog’s new Forklift Personal Simulator Version 2 puts trainees at the controls of a typical sit-down, counterbalance factory forklift with rear-wheel steering (also called “sit-down rider truck”, “lift truck”, and “fork truck”). Scenarios are typical of transportation service centres, factories, warehouses, and distribution centers, with a wide variety of loads and storage arrangements, along with truck bays for loading and unloading and a flatbed truck outside.

Simlog’s Forklift simulation software is configurable, to reproduce the many different kinds of real forklifts. Three different power system options are available: Internal Combustion (gas-powered), and two versions of Electric. (Different simulator controls are required for each option, and the simulated forklift will also operate differently.) Use three or four levers, or even two joysticks, in addition to a steering wheel, transmission control lever, and pedals.
SimSpray Paint

Accelerate spray painter skills training with SimSpray, the turn-key, mobile simulation-based training tool. 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:
• Realistic Paint and Defects (Drips, Sags, Dry Spray, and Orange Peel)
• Paint in Coating or Coverage (Mil Build) Views
• 3D Performance Analysis and Replay
• Stationary and Conveyored Environments
• Easy-to-Follow Visual Cues (Angle, Distance, and Speed)
• Customizable Curriculum

SimSpray POWDER

SimSpray POWDER is ideal for simulation-based powder-coating training. The turn-key system is mobile, easy to use, and cost-effective. The immersive VR technology used in SimSpray POWDER enables you to transform your room into a powder coating booth that provides students a fun, engaging way to train while preparing them for the core skills they’ll need on the job.

SimSpray POWDER Features:
• Learn Faraday Effect Strategies and Common Defects through Activities
• Powder Coat in Coating or Coverage (Mil Build) Views
• 3D Performance Analysis and Replay
• Stationary and Conveyored Environments
• Easy-to-Follow Visual Cues (Angle, Distance, and Speed)
• Customizable Curriculum

SimSpray Go HVLP

Introducing the SimSpray Go HVLP, SimSpray’s newest table-top simulation-based HVLP painter training tool. This convenient and easy-to-use virtual reality trainer will turn any space into a spray booth. Accelerate HVLP painter training with SimSpray Go’s immersive VR technology while saving time, money, and reducing exposure to VOCs.
LJ Create
ETA Electronics Certification

LJ Create’s self-contained electronics program gives you all the resources you need to teach a complete electronics course. This compact solution includes an electronics trainer and a range of interchangeable cards, providing quick and easy hands-on learning for students of all abilities. LJ Create’s trainer is the perfect blend of component based and systems training, including a project-based circuit construction and troubleshooting.

BRAND NEW CERTIFICATION PROGRAM

- 100% standards coverage: everything you need to teach a complete SET program.
- Quick and easy hands-on learning for students of all abilities.
- Perfect blend of component-based and systems training.
- Detailed, pre-prepared, 4-block course.
- Includes tracked formative and summative tests.

Featuring a brand new electronic systems trainer

- Flexible trainer for teacher demo, group work, and independent learning.
- Portable for any classroom: no need for a dedicated electronics lab.
- Start building circuits in 30 seconds, stack to store when lesson is over.

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LJ Create Mechatronics Programs

Prepare your students for success in Mechatronics

LJ Create Mechatronics is a set of courses at three levels, designed to provide students with a strong foundation in mechatronic principles and applications.

The courses will provide students with the expertise they need to succeed in industrial skills programs and industry certification courses.

Foundation Mechatronics

Short project-based courses that explore basic mechatronic principles. Investigate the application of mechatronics in a wide range of different career clusters:

- Engineering Design
- Mechatronic Systems
- Computer Science
- Electrical Technology
- Capstone Robotics Project

Mechatronic Systems

Courses teaching the basic principles of the technologies used in mechatronic systems:

- Engineering Principles
- Mechanical Systems
- Fluid Power
- Electrical and Electronics
- Introduction to Process Control

Advanced Mechatronics

Advanced mechatronics courses that allow students to specialize, and lead towards preparation for an industry certification:

- Advanced Mechatronics Core - All students explore advanced mechatronic principles including robotics, production and business concepts.
Minds-i STEM Integrated Robotics

MINDS-i Robotics Education is designed to give students an interactive approach to applied science, technology, engineering and math (STEM). MINDS-i is rocking the Robotics Education world with a high-technology platform that is simple to use, extraordinarily durable, infinitely modifiable, and will prepare students with the skills they need to excel in the 21st century.

MINDS-i inspires a rigorous college and career relevant experience through STEM Robotics in the everyday classroom in a format that can impact each and every student.

Foundations to Robotics - Breadboard

This teachers resource LAB is designed to accompany the MINDS-i Foundation Curriculum. It is a fully assembled and programmed robotics breadboard designed to aid in teaching programming.

The MINDS-i Breadboard allows the teacher and students to physically interact with the sensors on a stationary platform. It can be used as a quick and easy method for checking students wiring and code.

MINDS-i Robot - Arduino Robot Kit

The 2-in-1 Arduino kit is the perfect entry point for those interested in programming. Build one of two chassis at a time: the Hexbot or the Line Follower.

The Hexbot uses cam driven legs to navigate around the room avoiding objects with touch sensors. The Line Follower uses "light sensing" QTI sensors to follow a path laid out and ultrasound sensors to avoid obstacles. The set includes easy to use visual instructions for building and programming.

Kit Design

Each kit is designed for two to three students and requires about three hours to build and program. The Arduino Robot kit does not include curriculum. See the Foundations Lab and Drones Lab for curriculum.

Foundations to Robotics - 4x4 and 6x6 Labs Available

The Foundations Labs are introductory courses into the world of STEM and Robotics. Both Labs are designed to be an interactive approach to applied science, technology, engineering and math. Students will become familiar with the basics of robotics and programming in a team based environment.

Course Design

Each Lab is one semester (90 Hour), and is designed for three to five students. The Foundations Labs are the recommended prerequisites to the Drones Lab + Curriculum.
MINDS-i Drone Curriculum - UAV XL Drones Lab

The MINDS-i Drone Curriculum is designed to teach students the complex systems of drone technology aligned with 21st century teaching standards. Designed as an interactive approach to applied learning, students will explore the fields of science, technology, engineering, and math. Students will become familiar with the basics of drone systems, robotics, and programming in a team based environment.

Curriculum Outline:
Each lab is designed for three to five students and includes a half semester (45 Hours) of lesson plans and materials. Foundations is the recommended prerequisite to the MINDS-i Drone Curriculum.

MINDS-i Drones Lab and Curriculum

UAV Mini + UGV Drones Lab and UAV XL + UGV Drones Lab Available

The MINDS-i Drones Lab and Curriculums are an introduction into the world of Drones and Robotics. It is designed as an interactive approach to applied science, technology, engineering and math. In these courses, students will become familiar with the basics of Drone robotics and programming in a team based environment.

Course Design
Each Lab is one semester (90 Hour), and is designed for three to five students. The Foundations Labs are the recommended prerequisites to the Drones Lab + Curriculum.

UAV Mini + UGV Drones Lab

UAV XL + UGV Drones Lab
zSpace and NOCTI offer the opportunity for NOCTI certification to be added as an extension of a zSpace CTE program. Incorporating AR/VR training and credentials empowers schools to better prepare students for high-wage, high-demand careers!

- zSpace is the only AR/VR product endorsed by NOCTI
- All of zSpace CTE software offerings are aligned to NOCTI industry certifications

Aligned with 33 NOCTI Certifications:

1. Agriculture Mechanics
2. Animal Systems
3. Natural Resources
4. Horticulture - Landscaping
5. Diagnostic Services (Health)
6. Therapeutic Services
7. Small animal Science and Technology
8. Wind Turbine Maintenance Technician
9. Technical Draing
10. Dental Assisting
11. Manufacturing Technology
12. CAD/CAM
13. Nursing Assisting
14. Practical Nursing
15. Welding
16. Health Assisting
17. Electronics
18. Electronics Technology
19. Industrial Electricity
20. Industrial Electronics
21. Mechatronics – Level 1
22. Pre-engineering/Engineering Technology
23. Automotive Technician – Advanced
24. Automotive Technician – Core
25. Diesel Technology
26. Heavy Equipment Maintenance and Repair
27. Small Engine Technology
28. Cosmetology
29. CAD
30. Electrical Construction Technology
31. HVAC - Refrigeration
32. HVAC – Service and Repair
33. Industrial Maintenance Mechanics
Explore More!

Makerspace Product Guide

Hybrid Learning Solutions for Career and Technical Education Product Guide

Transportation, Logistics & Supply Chain Management Program Guide

Visit our website or contact us for your free copies of our current product guides.

Allegheny Educational Systems, Inc.

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