

CAREER AND TECHNICAL TRAINING

3D Printers
Auto Technician Training
CNC Mills
CNC Plasma Cutters
CNC Routers
CNC Waterjet Cutters
Direct To Garment
Fab Lab Design
Furniture and Storage
Large Format & UV Printers
Lasers
Project Based Learning
SOLIDWORKS
Vinyl Sign Cutters
Welding
Wood & Metal Working

CATT

CAREER AND TECHNICAL TRAINING, LLC



Turning Fab Labs into **FAB** Labs since 2003





About Us



Since 2003, Career and Technical Training, LLC has been providing technology and fabrication lab products in Colorado, Wyoming, Utah, and New Mexico.

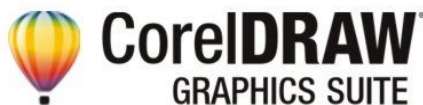
Located in Windsor, CO, our products come with service support, training, and a dedicated representative to assist.

Let our highly trained team help you evaluate the best resources to fit your space and budget.

We look forward to working with you!

Call us to schedule a meeting today: (970) 686-0379

We proudly work with quality partners such as:



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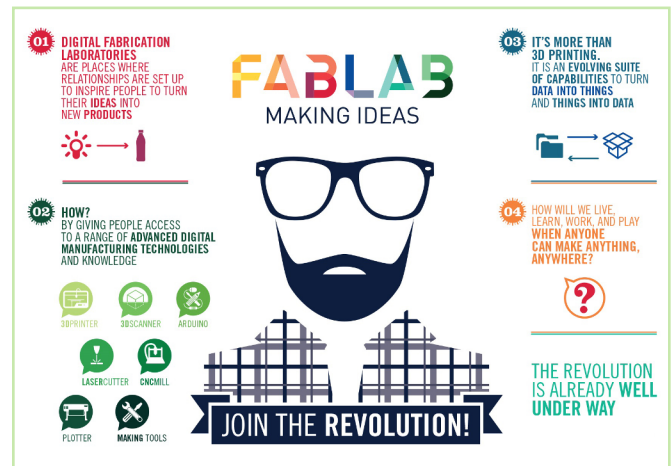
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Getting Started

In his book, "*The World is Flat*", author Tom Friedman argues that all we really need to know to be successful in life is how to come up with an idea and act upon it. Children have the first part down--they are hardwired for creativity. The challenge is what comes next. That's what makerspaces or fablabs teach kids: *the confidence and the competence necessary to execute their creative vision.*



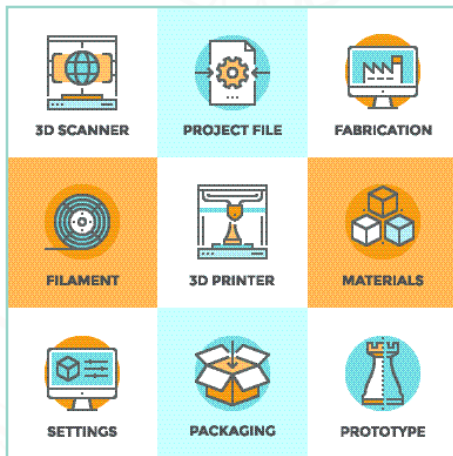
If you know anything about makerspaces or fablabs, you are probably thinking that you need a lot of fancy tools. But buying a bunch of tools without considering how they will be integrated into the culture and curriculum of your school or community is a recipe for an underused workshop.

The planning process is a lot of work, but going through it dramatically increases the chance that the makerspace will be equipped with the right tools, and integrated into your community.

- 1. List the ideas and vision (hopes/dreams) you and others have for the space.**
Be sure to include stakeholders (board members, administration, and members of the community). Try telling stories about what makers will do in the space and what they will learn.
- 2. Define the skills, knowledge and habits that makers will develop in your space.**
Describe what and how the space will help makers develop these skills. If you want students to be competent on all the tools in the space, consider how you will teach and assess this competence.
- 3. Define the culture for the space.**
Decide how people will behave in the space and how those standards will be communicated. How will you deal with safety around tools? How will you teach in the space?
- 4. Determine integration points into your curriculum, and how this space will impact its users.**
Math and science are fairly straightforward to integrate into a makerspace, but there are many integration points in history, social sciences and art. Where are you going to start?
- 5. Based on your integration points, define what projects you are going to include and when.**
If your kids have never held a hammer, it might make sense to start with simple skill builders before you get to robotics and electric cars. For a community makerspace, create a calendar and offer classes taught by local artists or makerspace members with enough skill and experience willing to teach others something new.
- 6. Design your space and pick the tools based on the decisions above.** When designing the space, remember to consider the location (floor space), power requirements, ventilation, safety guidelines, restricted areas around tools and what zone needs eye and ear protection. Make sure to include workspace for teams and set aside 30% of the room for project storage.

Source: 6 Things to Consider Before Starting Your Makerspace, Parker Thomas, October 2014

Makerspace/FabLab Tool Checklist

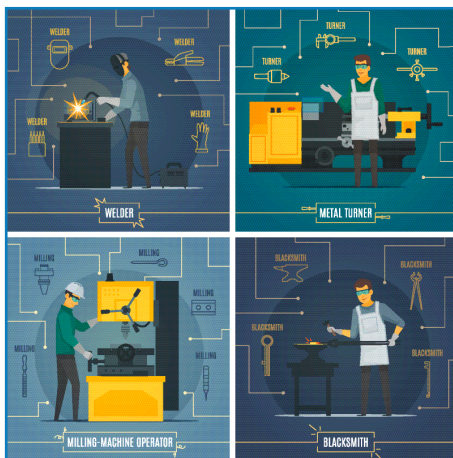
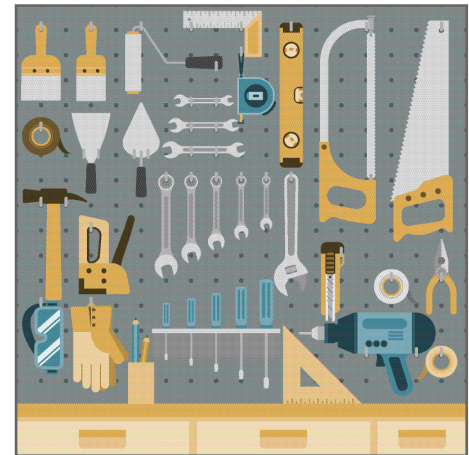


☐ Prototyping and Printing Space

- ☐ 3D Printer
- ☐ Subtractive Rapid Prototyping Machine
- ☐ CNC Router
- ☐ Laser Engraver/Cutter
- ☐ Mechanical 3D Modeling Software
- ☐ Graphic Design Software
- ☐ Large Format Print/Cut Machine
- ☐ Vinyl Sign Cutting Machine
- ☐ UV Printing Machine
- ☐ Commercial Embroidery Machine
- ☐ Industrial Sewing Machine
- ☐ Project workstations
- ☐ Storage solutions for raw materials and projects
- ☐ Presentation stations

☐ Woodworking Space

- ☐ Subtractive Rapid Prototyping
- ☐ CNC Router
- ☐ Table Saw
- ☐ Laser Engraver/Cutter
- ☐ Woodworking equipment and tools
- ☐ Project workstations
- ☐ Storage solutions for raw materials and projects
- ☐ Mechanical 3D Modeling Software
- ☐ CAD/CAM Software



☐ Metalworking Space

- ☐ CNC Plasma Cutter
- ☐ CNC Water Jet Cutter
- ☐ Laser Engraver/Cutter
- ☐ Welders
- ☐ Welding stations/booths, tables and ventilation systems
- ☐ Metalworking equipment and tools
- ☐ Project workstations
- ☐ Storage solutions for raw materials and projects
- ☐ Mechanical 3D Modeling Software
- ☐ CAD/CAM Software

Can't find machine specifications to fit your needs and space? We can help by customizing them for you.

Fab Lab and Technology Lab Designs



We help you customize your space to fit your needs.

Design Area

We will assist you with planning a digital design area that will maximize your space for creativity and productivity, as well as integrate existing technology and manage power and cable systems. We give you options to customize your design space and technology infrastructure.

Build Area

Understanding that you now need a place to build projects, collaborate as a team and have the appropriate space for work activities, we offer laminate, hardwood butcher block, metal, shop-top composites and phenolic top workstations.

Storage Area

We recognize that organizing a space to accommodate multiple projects is challenging. We offer large lockers, built-in cabinets, mobile storage, robot cages, heavy-duty shop cabinets, high-density storage cabinets and other storage options to help build a space that is creative and functional.

Presentation Area

Our presentation stations provide a focal point for speakers to conduct presentations and for others to share their projects and ideas.

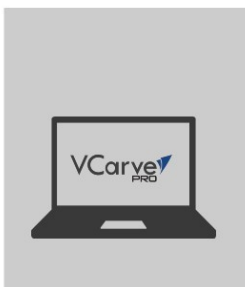
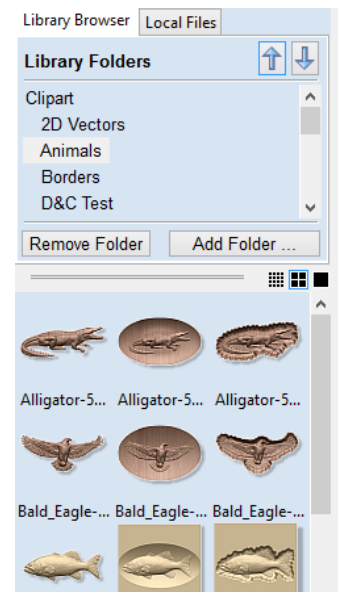
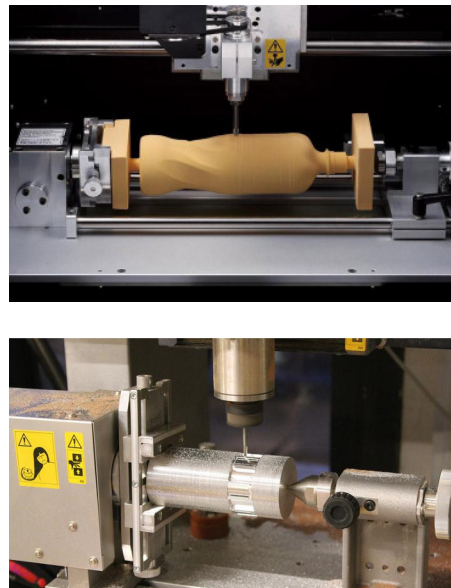
DESIGN SOFTWARE

Manufacturing Design Software

VCarve®

Provides a powerful but intuitive software solution for creating and cutting parts on a CNC Router. VCarve Pro gives you the power to produce complex 2D patterns with profile, pocket, drill and inlay tool paths, plus gives you the ability to create designs with v-carving textures as well as import and machine unlimited Vectric 3D clipart or single model files.

The 'Pro' edition gives you unlimited job and tool path size, true shape nesting & job set-up sheets, ideally suited to a production environment.



A CNC Router is an amazing tool but it will not do anything unless it receives instructions. VCarve is designed to tell the CNC how to move to create your projects.

SOLIDWORKS® Education Suite

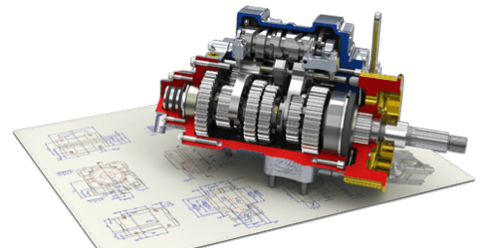


Mechanical 3D Modeling

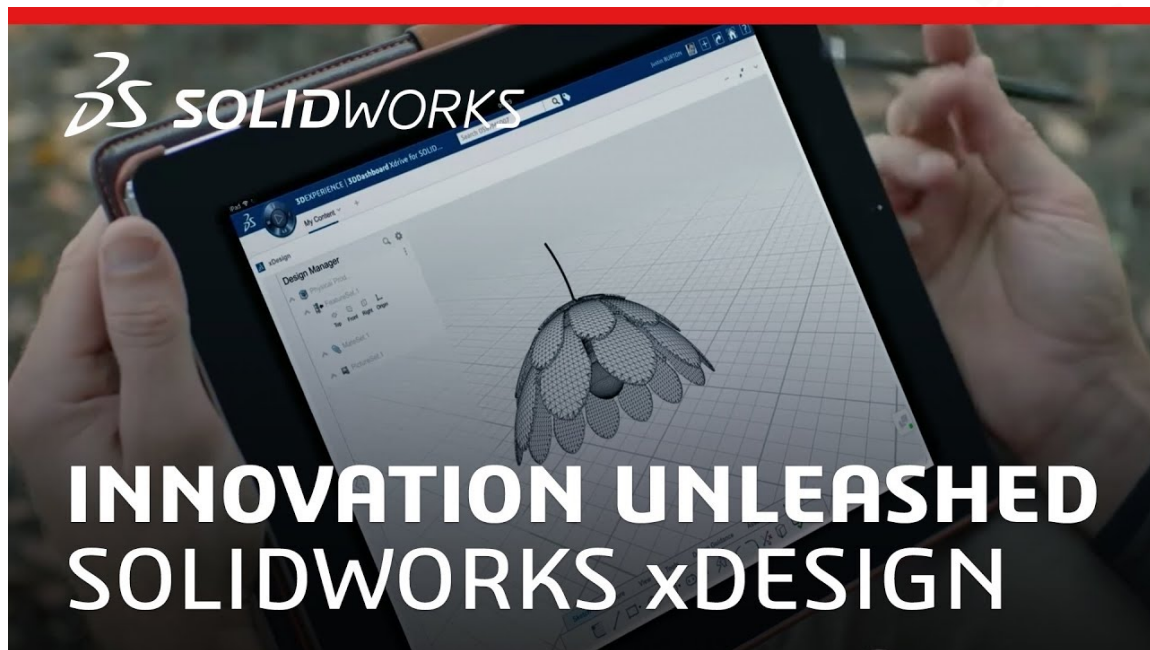
With SOLIDWORKS Education Edition, educators and students have access to the same 3D development tools used by countless engineering and design professionals around the world, so they can focus on what's really important—fostering new ideas, solving problems, teamwork, and innovation.

The education suite includes the following:

- SOLIDWORKS Premium (3D CAD software)
- SOLIDWORKS Simulation Premium (FEA tools)
- SOLIDWORKS Flow Simulation (CFD tools)
- SOLIDWORKS Motion (Kinematics analysis)
- SOLIDWORKS Plastics Premium (Part and mold filling analysis)
- SOLIDWORKS Sustainability (Environmental impact tools)
- SOLIDWORKS Electrical Professional (Electrical systems design tools)
- SOLIDWORKS CAM Professional (Integrate design and manufacturing processes)
- SOLIDWORKS Model Based Definition (Define, organize, and publish 3D PMI)
- SOLIDWORKS Composer (Technical documentation tools)
- SOLIDWORKS Visualize Professional (Develop rich, photo quality content)
- MySolidWorks for Students (Training content for everything SOLIDWORKS)
- SOLIDWORKS Certification Testing



SOLIDWORKS® 3DEXPERIENCE



SOLIDWORKS xDesign is a new way of looking at CAD design. It is one of the cloud-based applications that are part of the 3DEXPERIENCE platform. Just by being part of the platform allows this software to do some pretty interesting things that you can't do with traditional SOLIDWORKS alone.

SOLIDWORKS xDesign is a feature-based parametric solid modeler that runs completely inside a web browser, which means it gives users platform independence. It also allows for location independence, as it can be run from mobile computer and tablet devices, not just a single workstation. In addition to being cloud-based, it provides computer resources during the design process that have never been available in the past.

Dimension components are built by adding and removing material using standard solid modeling features. If a design needs to be modified, simply change a dimension to resize the part to whatever value is entered.

With data stored in the online platform, projects can be accessed anytime by anyone on your team around the globe. The data stored in the platform is searchable and filtered using the 3DEXPERIENCE 6W tags. Information can be added to any part allowing users to more quickly find and reuse their existing data.

Design Guidance included in this software allows users the ability to simulate their models during the design process. Built-in topology optimization allows the software to guide users into an optimal design with minimal input. Having this information at the start of the design process allows users to make critical design decisions about the shape of the component early in the modeling process.

As part of the 3DEXPERIENCE Platform, xDesign has access to the 3DEXPERIENCE Marketplace built into the CAD tool. Access to parts and manufacturers around the world is made available through a simple toolbar in the software interface. One click of an icon and prototype parts are able to be outsourced to a host of screened and approved vendors!

Mechanical 3D Modeling



RESEARCHERS

Take advantage of the latest in 3D CAD software to solve the world's most complex problems.



SOLIDWORKS® Academic Research Licensing

With the SOLIDWORKS® Research Edition, researchers can access the latest in engineering technology, while communicating with other researchers and industrial users around the world.

There are no restrictions for use in publications, industry-funded projects, intellectual property transfer, and patent applications, and no educational watermark allowing you to clearly present your work. The SOLIDWORKS® Research Edition follows the commercial release time frame, keeping tools and designs always up-to-date.

CATT, LLC is the preferred premier education reseller, which means we offer the best pricing and best packaging available.



SOLIDWORKS® Certifications

SOLIDWORKS Certifications are a benchmark to measure your knowledge and competency with SOLIDWORKS software. A certification helps you stand out from the crowd and showcase your expertise to businesses and professionals alike - a valuable asset in a competitive job market.

Certified SOLIDWORKS® Associate (CSWA) Program

Certified SOLIDWORKS® Associate (CSWA) Certification demonstrates your aptitude with SOLIDWORKS®, 3D solid modeling techniques, design concepts and engineering practices, and commitment to professional development.

Certified SOLIDWORKS® Professional (CSWP) Program

Certified SOLIDWORKS® Professional (CSWP) Certification sets you apart as a person who has surpassed the basic skills of SOLIDWORKS® and who has developed an advanced understanding of the software. Achieving this certification establishes you as a highly competent professional in the use of SOLIDWORKS®.

SOLIDWORKS® Certifications

Certifications Available to You

- CSWA - Mechanical Design - Academic
 - CSWA - Electrical
 - CSWA - Additive Manufacturing
 - CSWA - Simulation
 - CSWP - Mechanical Design - Academic
 - CSWP - CAM
 - CSWP - Simulation
 - CSWP - MBD
 - CSWPA - Drawing Tools
 - CSWPA - Mold Making
 - CSWPA - Sheet Metal
 - CSWPA - Surfacing
 - CSWPA - Weldments
-
- 3DEXPERIENCE - Collaborative Business Innovator, Collaborative Industry Innovator, 3D Creator, 3D Sculptor



Why are Certifications Important?



- **Relevant job skills for students** - which opens doors to internships and full-time positions.
- **Industry recognized** - in fact, SOLIDWORKS certifications are the most recognized CAD certification by hiring managers.
- **Uniform measure of skills** - simply saying you have experience in SOLIDWORKS is not enough. Certifications are proof that you have a well rounded understanding of the tools.
- **Money back to your program** - certifications passed can result in up to \$1,000 back towards your school's program.



SOLIDWORKS® Online Training Program Lessons

SOLIDWORKS BASICS COURSE

1. Lesson 1
 - a. Introduction to the Course
 - b. So What is SOLIDWORKS
 - c. SOLIDWORKS Graphic User Interface
2. Lesson 2
 - a. Beginning a New Part
 - b. The Line Tool
 - c. The Circle Tool
 - d. The Rectangle Tool
 - e. The Arc Tool
 - f. The Sketch Dimension Tool
 - g. Special Notes on the Smart Dimension Tool
 - i. Sketching Shapes
3. Lesson 3
 - a. Installing Custom Templates and Template Selection
 - b. Selecting a Plane to Begin a Part
 - c. Under and Fully Defined Sketches
 - d. The Extrude Boss Tool
 - e. The Extrude Cut Tool
 - f. View Manipulation
 - g. Placing a Sketch on a Face
 - i. Rectangles
 - ii. Seal
4. Lesson 4
 - a. Shortcut Tips
 - b. Sketching Tips
 - c. Identifying the Mass of a Part
 - d. Extrude Boss by Midplane
 - e. The Trim Tool
 - i. Beginning Parts Activity
5. Lesson 5
 - a. Application of Materials
 - b. Convert Entities Tool
 - c. Sketch Mirror Tool
 - d. How I Made It
 - i. Pipe Spool
 - ii. Simple Wrench
6. Lesson 6
 - a. Editing a Part
 - b. The Offset Entities Tool
 - c. Changing Units of Measure-Precision in a Part
 - d. Creating Reference Planes
 - i. Plate
 - ii. Wall Mount
7. Lesson 7
 - a. Revolve Boss-Base
 - b. The Revolve Cut Tool
 - c. Feature Patterns
 - d. Feature Fillets and Chamfers
 - i. W/N Flange
8. Lesson 8
 - a. Mass Property Tool Options
 - b. The Measure Tool
 - c. The Shell Command
 - i. Display Case
9. Lesson 9
 - a. An Introduction to the Hole Wizard
 - b. The Hole Wizard Explained
 - i. Side Plate
 - ii. Trailer Connector Bracket
10. Lesson 10
 - a. The Swept Boss and Cut Tool
 - b. Creating Reference Tools (Advanced)
 - c. The Loft Tool
 - i. Handrail
 - ii. Hand Cart Handle
11. Lesson 11
 - a. The Rib Tool
 - i. Pole Base
 - ii. Small Parts Tray
12. Lesson 12
 - a. Linear Feature Patterns
 - b. Circular Feature Patterns
 - i. Wall Grate
 - ii. Brake Rotor
 - iii. 50T Gear
13. Lesson 13
 - a. An Introduction to Assemblies
 - b. How to Begin an Assembly
 - c. An Introduction to Mates
 - d. The Coincident Mate
 - e. The Concentric Mate
 - f. An Important Note about File Management (Assemblies)
 - i. Cable Tie Mount Assembly
 - ii. Bridge Assembly
14. Lesson 14
 - a. The Tangent Mate
 - b. The Distance Mate
 - c. Editing Mates
 - d. Exploded View of an Assembly
 - i. Connecting Rod Assembly
 - ii. V-Block Assembly
15. Lesson 15
 - a. The Width Mate
 - b. The SolidWorks Toolbox
 - c. The SolidWorks Toolbox Details and Breaking the Link
 - i. Rescue Pull Assembly
 - ii. Caster Assembly
 - iii. Creating a Library of Parts

SOLIDWORKS® Online Training Program Lessons

SOLIDWORKS BASICS COURSE

16. Lesson 16

- a. Installing Custom Templates
- b. An Introduction to Drawings
- c. Selecting a Drawing Template and Inserting Views
- d. Setting the Scale of the View
- e. Application of Dimensions
- f. An Example Drawing
- g. An Important Note about File Management (Drawings)
 - i. Drawing Problem 1
 - ii. Drawing Problem 2
 - iii. Drawing Problem 3
 - iv. Drawing Problem 4
 - v. Drawing Problem 5
- h. Application of Dimensions with the Model Items Tool
 - i. Activity 1
 - ii. Activity 2

17. Lesson 17

- a. Beginning an Assembly Drawing
- b. Adding Balloons to a Drawing
- c. Adding a Bill of Materials
 - i. Connecting Rod Assembly Exploded Drawing
 - ii. Rescue Pulley Assembly Exploded View Drawing

SOLIDWORKS CSWA COURSE

1. Lesson 1

- a. Introduction to the Course
- b. Introduction to the CSWA Exam

2. Lesson 2

- a. Mass Property Tool Options
- b. The Measure Tool
- c. Feature Start and End Conditions
- d. Dimensioning to the Edge of a Circle
- e. Creating the Practice Exam Parts
 - i. Warm-up Part 1
 - ii. Warm-up Part 2A
 - iii. Warm-up Part 3
 - iv. CSWA Part 5
 - v. CSWA Part 6
 - vi. CSWA Part 7
 - vii. CSWA Part 8
 - viii. CSWA Part 9
 - ix. CSWA Part 10
 - x. CSWA Part 11
 - xi. CSWA Part 12

3. Lesson 3

- a. How to Begin an Assembly for the Exam
- b. The Angle Mate
- c. The Distance Mate
- d. Limiting Mates - Distance and Angle
- e. Selecting Faces Through Other Components
 - i. Making Transparent
 - ii. Hiding
- f. Creating the Exam Assembly
 - i. D-Ring Assembly
 - ii. Hinge Assembly and Parts
 - iii. Hose Cap Assembly
 - iv. CSWA Practice Assembly 1
 - v. CSWA Practice Assembly 2
 - vi. CSWA Practice Assembly 3

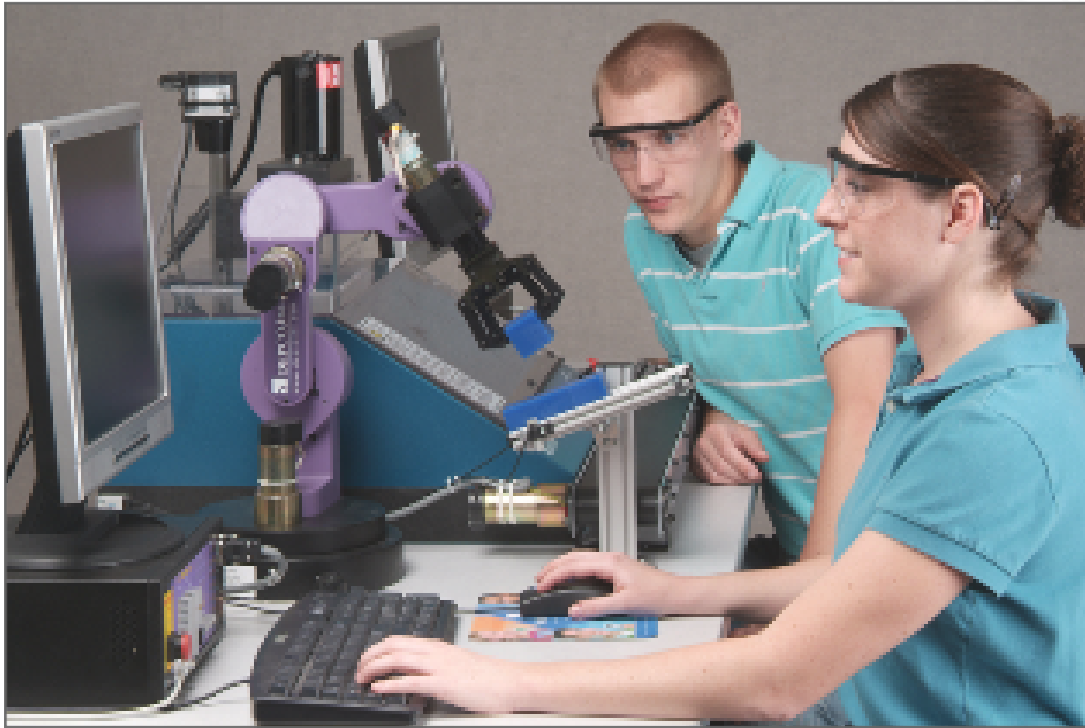
4. Lesson 4

- a. The Projected View
- b. The Auxiliary View
- c. The Section View
- d. The Aligned Section View
- e. The Broken Out Section View
- f. The Detail View
- g. The Break View
- h. The Crop View
- i. The Alternate Position View
 - i. View Information Details
 - ii. CSWA Practice Drawing Assignments

5. Lesson 5

- a. The CSWA Practice Exam

Project Based Learning



DEPCO Curriculum

DEPCO develops and markets educational curriculum for the middle school, high school, and post-secondary markets.

Product topics include:

- Building Trades
- Business, Marketing and IT
- Family and Consumer Sciences
- Career Explorations
- Graphic Communications
- Health Science
- Science
- Industrial Automation and Pre-Engineering
- Manufacturing and Pre-Engineering
- Industrial Maintenance

Please contact us for more information.

DEPCO Modules:

1. Building Trades

There will always be a demand for construction technology. This lab introduces students to the building trades through engaging, hands-on knowledge of a field with growing career possibilities as well as an understanding of the buildings in which they live.

- a. Building Construction
- b. Home Maintenance
- c. Landscape Design
- d. Residential Construction
- e. Residential Plumbing
- f. Residential Wiring

2. Business, Marketing and IT

DEPCO's Business, Marketing and IT lab uses interactive media, which enables instructors to effectively present a wide range of knowledge and technology skills to students. In addition to developing production skills, students also are totally immersed in the world of business with the exploration of in-depth concepts related to consumerism, entrepreneurialism, marketing, and finance.

- a. Career and Community
- b. Computer Animation
- c. Computer Programming
- d. Desktop Publishing
- e. Digital Photography
- f. Digital Video Production
- g. Digital Video Production Pro
- h. DVD Production
- i. Graphic Design
- j. Hospitality and Tourism
- k. Laser Engraving
- l. NAO - Humanoid Robotics Level 1
- m. Presentation Technology
- n. Vinyl Sign Making
- o. Web Page Design

3. Family and Consumer Science

DEPCO's Family and Consumer Sciences lab includes the Ready 4 Careers and Ready 4 Life programs. Ready 4 Careers is a career exploration program designed for 5th through 8th grade. Basic living skills are taught and reinforced. Ready 4 Life incorporates life lessons, skill development and career investigation within the FACS industry. This fun program meets 100% of the National Family and Consumer Sciences' standards.

- a. Career and Community
- b. Culinary Arts
- c. Home Maintenance
- d. Home Safety and Security
- e. Hospitality and Tourism
- f. Nutrition and Wellness

4. Career Explorations

DEPCO's Career Concepts and Experiences labs introduce middle and high school students to a wide variety of level one and two applied technology subjects in career areas such as science, communication, construction, engineering, FACS, graphics, manufacturing, and much more.

- Biotech and Genetics
- Building Construction
- Career and Community
- CNC Lathe
- CNC Mill
- Computer Animation
- Computer Programming
- Culinary Arts
- Desktop Publishing
- Digital Audio Production
- Digital Manufacturing
- Digital Music
- Digital Photography
- Digital Video Production
- Digital Video Production Pro
- DVD Production
- Electronics
- Engineering Structures
- Finance
- Flight Transportation
- Four Stroke Engine
- Graphic Design
- Home Maintenance
- Home Safety and Security
- Horticulture
- Hospitality and Tourism
- Landscape Design
- Laser Engraving
- Mastercam
- NAO - Humanoid Robotics Level 1
- Nutrition and Wellness
- Plant Science
- Precision Measure
- Presentation Technology
- Programming Basics
- Research and Design
- Residential Construction
- Residential Plumbing
- Residential Wiring
- Robotics
- Robotics Engineering
- Rocketry and Space
- SOLIDWORKS Basics
- Totally Trebuchet
- Vinyl Sign Making
- Web Page Design

DEPCO Modules:

5. Graphic Communications

Students are immersed in the world of graphic communications with the exploration of in-depth concepts related to graphic design, computer animation, desktop publishing, DVD production, and digital photography.

- a. Computer Animation
- b. Desktop Publishing
- c. Digital Photography
- d. Digital Video Production
- e. Digital Video Production Pro
- f. DVD Production
- g. Graphic Design
- h. Laser Engraving
- i. Presentation Technology
- j. Vinyl Sign Making
- k. Web Page Design

6. Health Science

The Health Science Education Series is correlated to the National Health Care Skills Standards established by the National Consortium on Health Science Education to create an educationally sound, standards-driven curriculum with specific, hands-on skill sets. Our programs have been correlated to many state standards and include:

a. Health Science Foundations

Eleven units totaling 120-150 hours delivered in a web browser format accompanied by lesson plans for instructor-led activities.

b. Career Pathways

A high-level, multi-media, modular curriculum designed to give students knowledge and hands-on experience in specific health career areas; educators can use the curriculum as either independent or lock-step group study.

7. Science

DEPCO's Science Program is a natural articulation to production agriculture, which is already an essential part of every educational agriculture program. Science includes a Basic and Intermediate program. The Basic Program consists of ten 5-day modules that cover a wide range of agricultural-related topics such as aquaponics, food science, and soil science. The Intermediate program follow up to the Science Basics program that covers many advanced topics while incorporating skill development and career investigation within segments of the agricultural industry. Science touches on numerous science career areas, giving students valuable knowledge and hands-on experiences.

8. Industrial Automation and Pre-Engineering (IAP)

DEPCO's Industrial Automation and Pre-Engineering program is a skill-based, hands-on, interactive learning system that promotes higher-level learning in career areas such as industrial automation, pre-engineering, manufacturing technology, industrial maintenance, and mechatronics. Through partnerships with companies such as Festo®, Mastercam®, Starrett®, Allen-Bradley, Baldor®, and SOLIDWORKS®, students use equipment and software that is standard in today's industries. IAP provides students with not only the basics, but also the advanced knowledge and troubleshooting skills needed to have the competitive edge in today's job market. This innovative program is designed as an advanced industrial automation and pre-engineering program ideal for secondary and post-secondary schools. IAP has been developed for students interested in pursuing high-wage, high-growth, and high-demand careers in the industrial and engineering fields.

a. IAP Level 1: Fundamentals

- i. Automated Material Handling
- ii. CAD/CAM
- iii. CNC Machining
- iv. CNC Turning
- v. Engineering Design
- vi. Hydraulics
- vii. Mechanical Systems
- viii. Motor Controls
- ix. NAO - Humanoid Robotics Level 1
- x. PLC (Industrial)
- xi. Pneumatics
- xii. Sensors
- xiii. Tolerance and Quality Control

b. IAP Level 2: Applications and Troubleshooting

- i. CAD/CAM Level 2
- ii. CNC Machining Level 2
- iii. Engineering Design Level 2
- iv. Hydraulics Level 2
- v. Mechanical Systems Level 2
- vi. Motor Controls Level 2
- vii. Tolerance and Quality Control Level 2

DEPCO Modules:

9. Manufacturing and Pre-Engineering

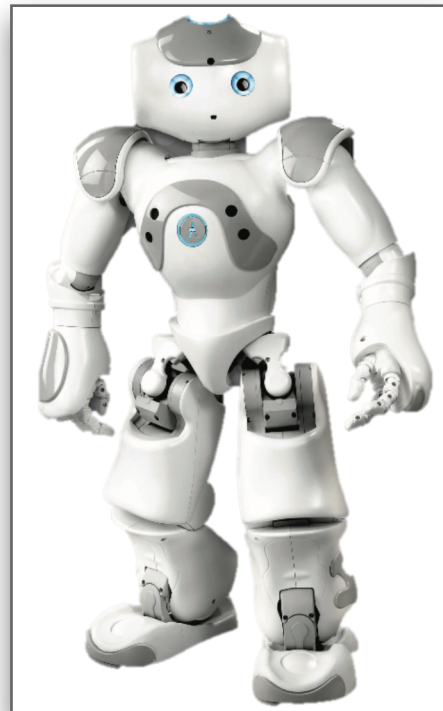
This program includes the Manufacturing and Pre-Engineering programs. The Manufacturing program is designed for high schools, and teaches students about sophisticated manufacturing technologies using industry standard equipment and software. The Pre-Engineering program is a comprehensive semester or one-year program that helps students prepare for further education so they may attend an area-specific university or program, or obtain a professional career that pertains to engineering.

- a. Manufacturing
 - i. CNC Lathe
 - ii. CNC Mill
 - iii. Digital Manufacturing
 - iv. Mastercam
 - v. Precision Measure
 - vi. Robotics
- b. Pre-Engineering
 - i. Electronics
 - ii. Engineering Structures
 - iii. NAO - Humanoid Robotics Level 1
 - iv. Research and Design
 - v. SOLIDWORKS Basics

10. Industrial Maintenance

DEPCO's Industrial Maintenance Program is a skill-based, hands-on, interactive learning system that promotes higher-level learning. This program utilizes equipment and software that is standard in today's industries. It provides students with not only the basics, but also the advanced knowledge and troubleshooting skills needed to have the competitive edge in today's job market. This innovative program is designed as an advanced industrial automation and pre-engineering program ideal for secondary and post-secondary schools.

- a. Level 1: Fundamentals
 - i. Automated Material Handling
 - ii. CAD/CAM
 - iii. CNC Machining
 - iv. CNC Turning
 - v. Engineering Design
 - vi. Hydraulics
 - vii. Mechanical Systems
 - viii. Motor Controls
 - ix. PLC (Industrial)
 - x. Pneumatics
 - xi. Sensors
- b. Level 2: Applications and Troubleshooting
 - i. CNC Machining Level 2
 - ii. Engineering Design Level 2
 - iii. Hydraulics Level 2
 - iv. Motor Controls Level 2
 - v. Tolerance and Quality Control Level 2



NAO STEM

(NAO Robots & Accessories, Curriculum & Software, Training)

Conceived for students of all levels, NAO is a versatile robot that can help you explore a variety of subjects through lively hands-on experiments and programming. From computer science to mathematics, its user-friendly appeal will energize scientific curricula while engaging and attracting students.

LESSONS:

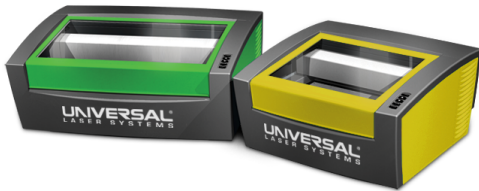
- | | |
|-----------------------------------|-------------------------------------|
| 1. Evolution of Robotics | 10. Object Learning and Recognition |
| 2. Introduction to the NAO Robot | 11. Timeline Animation with NAO |
| 3. Safety and Set Up | 12. Timeline Animation with 3D NAO |
| 4. Introduction to Telepathe | 13. Behavior Layers |
| 5. Telepathe | 14. Menu Creation and Data Transfer |
| 6. Introduction to Choregraphe | 15. Walking |
| 7. Basic Interactions with NAO | 16. Logic Boxes |
| 8. Speech and Sound Recognition | 17. Sonar |
| 9. Face Detection and Recognition | 18. Object Retrieval |
| | 19. Basic Python Scripting |
| | 20. Challenge and Review |

Laser Materials Processing



VLS Desktop Series

(from) \$9999



The VLS2.30 and 3.60 Desktop laser platforms are the easiest way to get started with laser technology. About the size of a printer, the VLS Desktop series packs sophisticated laser processing capabilities into an attractive, durable package. Installation and operation is simple. The ease of use and small footprint makes it easy to fit onto your workbench or into your business.



VLS Platform Series

(from) \$14,999

The VLS3.75, VLS4.75 and VLS6.75 freestanding laser platforms offer increased maximum laser power levels and larger working areas than the desktop models. The VLS freestanding laser platforms are equipped with Universal Laser Systems' patented Rapid Reconfiguration™ technology, so laser sources can be installed, removed and exchanged in seconds without the use of tools. The increased workspace, power and flexibility of the VLS freestanding laser platforms make them a good choice for a growing business.

PLS6.150D Platform



The PLS6.150D is engineered for significant gains in throughput. We suggest this series for customers seeking to expand a business or conquer challenging applications. The PLS platform series provides incremental optimization features for manufacturing applications requiring power, speed and superior raster and vector performance. The PLS platforms provide enhanced power and productivity for faster laser marking and engraving thus making it ideal for throughput-focused operations. Please contact us for pricing.



PROFITABILITY by design

Productivity
Usability
Flexibility

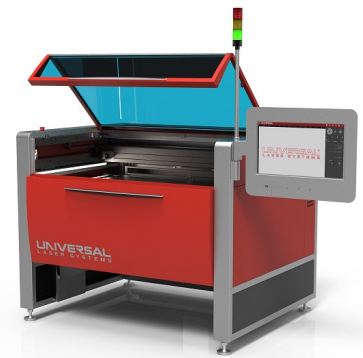
ILS Platform Series

The ILS series, our largest platforms, is ideal for businesses that need high productivity or process large objects. The ILS laser platforms feature work areas up to twice as large as the largest PLS or VLS platforms, and a patented, true Class 4 material pass-through mode is available for safe processing of objects of unlimited length. Factory-ready features like the automation feature allow a properly configured ILS laser platform to serve as either a stand-alone production solution or to be an integrated component of an automated assembly line. Please contact us for pricing.



ULTRA X6000 Platform

The ULTRA X6000 platform offers laser material processing for the widest possible range of materials. It is designed and ideally suited for precision material processing in manufacturing, research and development, academic research, and prototyping environments. With its unique modular architecture, customizable solutions can be easily reconfigured with a wide array of options for enhancing performance, capability, and safety to complete the perfect solution to meet present and future business needs. Please contact us for pricing.



ULTRA R5000 Platform

The ULTRA R5000 platform offers laser material processing for a wide range of materials. It is designed and ideally suited for material processing in manufacturing, research and development, academic research, and prototyping environments. The ULTRA R5000 has a materials processing envelope of 32 x 24 inches, with support for materials with a thickness up to 12 inches. Please contact us for pricing.



Metal Laser Cutters



FabLight Sheet Metal Laser Cutter

FabLight Sheet is a flexible and powerful sheet metal laser cutter. Equipped with an industrial-quality IPG fiber laser and precise mechanical control, you can make just about anything metal you or your customers can think of. It can be outfitted with one of three IPG laser sources depending on intended use case.

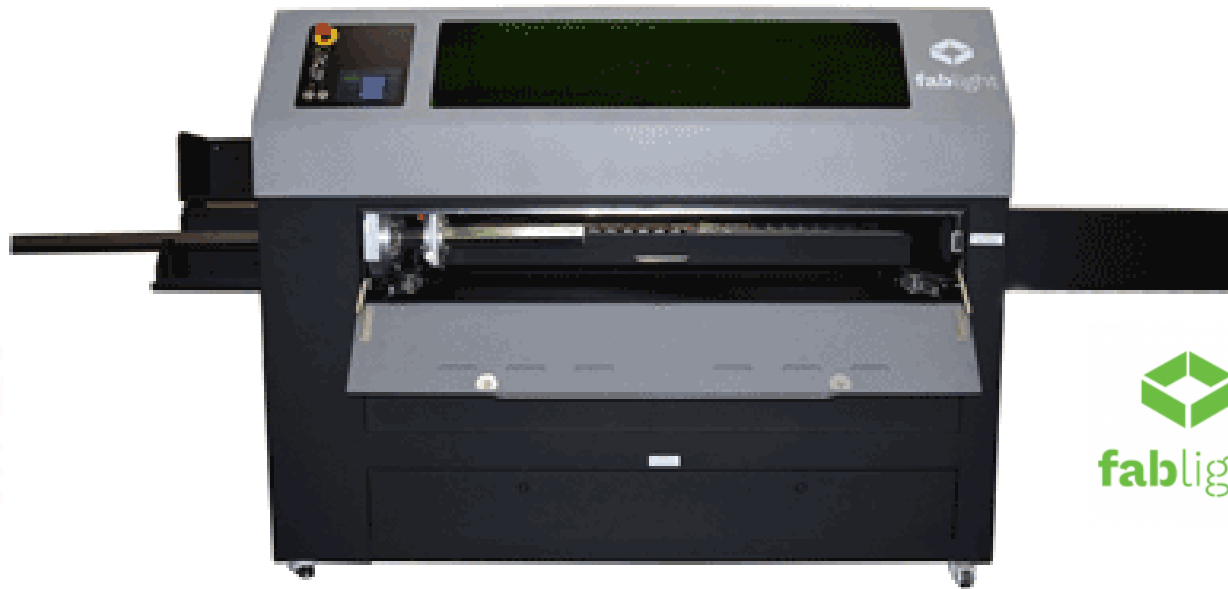
With a laser beam spot size of 0.1 mm, the kerf is tiny compared to other metal cutting technology like plasma or waterjet. With our industrial servo motors, mechanical assembly, and motion control software, we can produce a cutting accuracy of 0.15 mm/m.

It can fit a 25 x 50 inch sheet, which is a quarter of a standard sheet. This compact size fits easily into any shop, and takes up less than 21 square feet of real estate. The drawer-loading pallet allows for ergonomic loading of full sheets, and the sheet size is still manageable for a single person to handle.

Since the laser is in a fully enclosed Class I chassis, there is no special eyewear required around the laser, making it even easier to use in any shop environment - fabrication shop, machine shop, prototyping shop, school shop.

The laser source is air-cooled and requires no special chiller. It also includes a HEPA filter dust collector so that no external ventilation or ductwork is required.

Most shops should be ready for a FabLight since all models run on a 110V, 20A outlet.



FabLight Tube and Sheet Laser Cutter

Historically, tube laser cutting has been very expensive. With the FabLight Tube, we've brought the cost of such a machine way down - within reach of many businesses and schools. The FabLight Tube laser cutter will cut and engrave on square, rectangle and round tubes up to 2-inch diameter and up to 52-inches long or 76-inches with optional tube extension.

It can produce complex geometry on the tube ends, including a cope, fish mouth, and tab and slot. Using the laser on tubes is much faster, cleaner and cheaper than using traditional hand or power tools. The fit-up between tubes comes out perfect with the FabLight.

Internal features such as complex holes, slots, notches, and other features along the tube are also very easy to cut during the same operation as the ends cuts.

Each FabLight laser cutting machine is fitted with one of three laser power levels, selected based on intended use.

- **FL1500 Sheet Metal** - Good for thinner sheet metal 2-mm and thin-walled tubes
- **FL3000 Good all-around** - Better for 4-mm sheets and tubes
- **FL4500 The Powerhouse** - Best for thicker metal up to 6-mm, and fastest production on thinner material

Software is included free for every FabLight model to help keep tube design and cutting simple.

Laser Materials Processing Applications

WOOD

Lasers can process many different types of wood, allowing you to design new products for a wide variety of industries.

- Arts and crafts
- Architectural models
- Decorations
- Furniture
- Classroom applications
- Gift items
- Interior design
- School supplies
- Shopfitting
- Toys



GLASS and CERAMICS

Create beautiful laser engraving and etching on glass and ceramic. Laser etched glass produces a stunning matte effect. Very fine contours and details can be etched into glass and ceramic. Personalized gifts for parties or various events are memorable and make laser-engraved glass and ceramics truly unique.



PLASTICS and ACRYLIC

Acrylic is ideal for laser processing projects and can be engraved to create a matted finish or marked to create a color change.

- Advertising technology
- Digital printing
- Shop and exhibition stand construction
- Architectural model construction
- Classroom applications
- Displays
- POS materials
- Outdoor and indoor signs
- Acrylic trophies



Vinyl Sign Cutters



STIKA Desktop Cutters

The ultimate hobby and small decal machines for offices, schools, restaurants and stores, STIKA Desktop Cutters come in 8.5", 12" and 15" models and produce colorful POP displays, labels, iron-ons and more. Creating custom vinyl graphics has never been faster or more affordable.

STIKA Desktop Cutter SV-8
STIKA Desktop Cutter SV-12
STIKA Desktop Cutter SV-15

\$595
\$795
\$1095



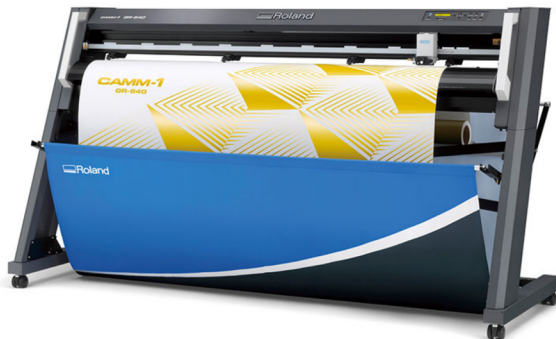
CAMM-1 GS-24 Desktop Cutter

The Roland CAMM-1 GS-24 Desktop Cutter is precision and efficiency to the max. With a completely redesigned cutting carriage and blade holder, the GS-24 offers great stability, up to 10x overlap cutting and down force of up to 350 grams so that you can cut like never before - even on thick, dense substrates. The GS-24 is Roland's *best* desktop cutter ever.

CAMM-1 GS-24 Desktop Cutter

\$1995

CAMM-1 GR Series Large Format Cutters



Roland's Large Format Cutters are available in 54" and 64" model sizes. GR cutters are powerful, easy-to-operate devices. Packed with advanced and versatile new features, they are designed for a whole new level of sign, apparel, vehicle graphics and packaging production.

CAMM-1 GR-540
CAMM-1 GR-640

\$5995
\$6995

Large Format Printer/Cutters



VersaStudio BN-20

Easily the most versatile print device in its class — print and cut on a huge range of vinyl, films, and media. Create labels, decals, t-shirt transfers... you can also print and cut laminated graphics.

VersaStudio BN-20

\$8,495

TrueVIS SG2 Series Printer/Cutters



Available in 30-inch, 54-inch, and 64-inch models, the TrueVIS SG comes with FlexFire™ print heads for quality and high-efficiency, new cutting technology for increased accuracy, a Bluetooth-enabled mobile control panel, and brilliant, cost-effective, 4-color TrueVIS INK.

TrueVIS SG2-300

\$12,995

TrueVIS SG2-540

\$14,995

TrueVIS SG2-640

\$18,995

TrueVIS VG2 Series Printer/Cutters



Available in 54-inch and 64-inch models, the TrueVIS VG2 series produce vibrant colors and stunning details that cannot be matched by latex or other devices. Produce dynamic decals, brilliant banners, striking signs, and vibrant vehicle graphics on demand.

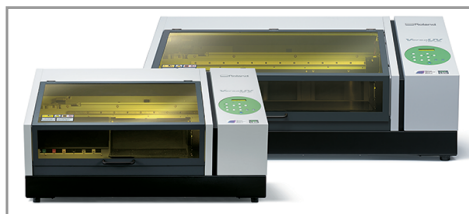
TrueVIS VG2-540

\$17,995

TrueVIS VG2-640

\$21,995

VersaUV LEF Series Printers



Offers users direct-printing capabilities onto a virtually limitless choice of three-dimensional media of up to 3.94-inches thick. These are machines for customizing and creating unique graphics products.

VersaUV LEF-12i

\$17,995

VersaUV LEF2-200

\$25,995

VersaUV LEF2-300

\$29,995

Direct to Garment Printing



Roland BT-12

Print directly onto cotton t-shirts, tote bags and other products from your desktop in minutes. Easy to use and affordable! Quick and versatile on-demand production, the BT-12 is perfect solution for maximum production in small spaces.

\$3495

FUSION IQ Heat Press

Functioning as either a swinger or draw press, the 16" x 20" Fusion IQ offers a heat-free workspace, touch screen settings, and live digital time, temperature, and pressure readouts. Plus, with industry-exclusive Threadability™, you can position a garment once, rotate, and decorate any area.

STAHL'S
Hotronix



\$2250



Air FUSION IQ Heat Press

Perfect for high-volume shops, specialty decorators, and direct to garment printing, the air-powered Air Fusion IQ heat press features a 16" x 20" heated upper platten and swing motion, for a heat-free workspace. Available in tabletop or adjustable-height pedestal stand models.

\$4400

Commercial Embroidery

melco

NEW!



Melco EMT16X Education Package

- Melco EMT16X Single-Head Embroidery Sewing Unit
- DesignShop Embroidery Digitizing Software - Lite
- Melco Operating System
- Dakota Quick Clicks 200-Design Download
- Action Illustrated 1000-Design Sample Pack
- Digitized Embroidery Designs (2) Free
- Machine Stand
- Removable Tabletop
- Madeira Starter Kit
- Cap Driver, and 2 Cap Frames
- Assorted Hoop Sizes
- 2-Day "Getting Started" On-Site Training
- DesignShop Webinar Software Training Series

\$13,795

Why Embroidery Designs?

Entrepreneurship

Fashion and
Interior Design

Graphic Design

Mixed Media Art

Multi-Decoration
Digital Art

Textile Design



Embroidery, Fashion Textiles and Design Technology

DesignShop v11 helps you take your creative vision and turn it into professional quality sewouts. With four levels to choose from, this intuitive PC based digitizing software is what you need to supercharge your embroidery and designs.



High-Tech is Standard



Simple PC-Based Interface, **Barcode-Ready**

Melco EMT16X Feature Enhancements

Acti-Feed™ Thread Control

Thread feed is controlled by the Acti-Feed™ thread control system, delivering the precise amount of thread automatically. Conventional machines require manual thread tension adjustment. With Melco EMT16X, enter a few simple inputs such as fabric type and hoop selection, and this intelligent system will do the rest!

Enhanced Auto Trimming

Melco EMT16X includes a new auto trimming system that is durable and reliable that reduces overall trim time. Virtually maintenance-free, the self-sharpening carbide knife assembly consistently slices poly, rayon, metallic, and thick Burmilana thread.

Automatic Tie-In and Tie-Out Stitches

Tie-In and Tie-Out stitches are critical for quality finished embroidery. Normally, this process requires manual editing. With Melco EMT16X, these critical stitches can automatically be added to the design, thus improving sew quality and durability.

New Needle Plate Design

Melco re-engineered the needle plate, creating one with more surface area to secure fabric and reduce material flagging. Not only does this help produce high-quality embroidery, it also reduces the appearance of marring or shine on the fabric caused by contact with the presser foot and needle plate.

New Grabber Blade

The new grabber blade features a refined shape and matte black finish to reduce glare, making it easier to change and thread needles.

New Bobbin Case Access Panel

When it's time to change the bobbin, simply flip the new panel down for quick, easy access. Installing the cap driver for hat embroider has also gotten simpler - just turn a thumb screw to remove the access panel. No tools required!

New Accessory - XL Hoop

New optional accessory! Say goodbye to large wooden hoops that are subject to warping and splintering. Designed by Melco, this high-quality composite hoop enables you to utilize the full sew-field of the Melco EMT16X. It's sure to become a favorite for those who embroider large designs on jacket backs and other large items. This optional accessory includes extended hoop arms.



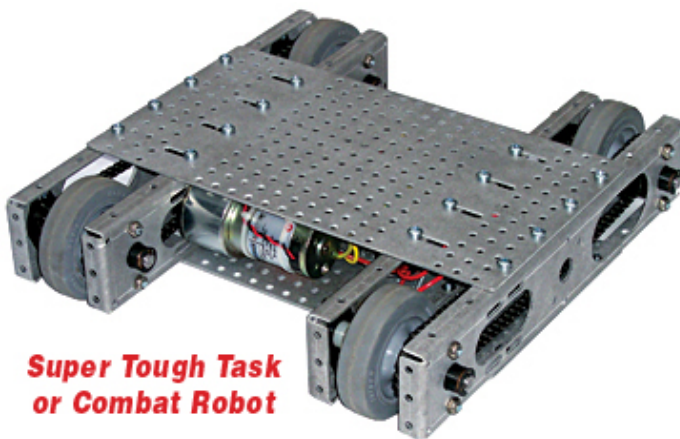
GEARS Invention and Design System

The GEARS-IDS gives teachers the *industrial strength* tools needed to create world class engineering and robotics challenges for their students in the comfort and convenience of their own classrooms. From trebuchets to autonomous robots, the GEARS-IDS allows students to participate in the science and history of technological achievement!

Students and teachers who use the GEARS-IDS share in the creative excitement of inventing their own engineering games and designing the modules, mechanisms and machines to play them.

GEARS-IDS is a great way to learn...

- How to apply basic math and physics concepts to the solution of a challenging problem
- The process of engineering and designing modules, mechanisms, and machines
- How to work as a member of an engineering team and participate in the engineering project life-cycle
- How to use 3D solid models to communicate ideas and create and analyze design iterations
- The fundamentals of mechanics, electronics, and pneumatics

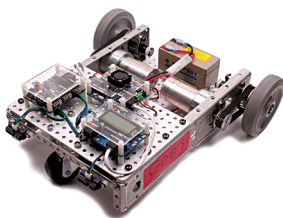


GEARS Heavy Metal Chassis

Get your students out of the toy store and into the real world of engineering. Pound for pound, the GEARS-HMC is the World's Toughest Educational Robot Chassis and can support 200-lbs standing weight! It is the ideal choice for start-up Engineering Education Classrooms as well as for Mature Robotic Programs. It is offered with either a standard chain drive or with an optional belt drive.

The GEARS-HMC is built to withstand the demands of classrooms, summer camps, engineering experiments, and even combat robotics!

HMC-LITE



Easy to assemble, HMC-Lite has a 2-wheel, belt-drive system. A third wheel provides maneuverability. Made of heavy gauge aluminum, it has a 13" wheel base, steel swivel caster, 4" rubber wheels, 3/8" axles, flanged bronze bearings, and competition all-metal gearhead motors.

H-MAC Articulating Robot



If you want to explore the outdoors with your robot, H-MAC will take you there. Endowed with the same rugged components as its siblings, H-MAC has an articulating body that lets it travel over the most challenging terrains.

3D Printers - High Quality Fused Deposition Modeling



Sindoh 3WOX DP200 3D Printer

\$1299

The DP200 can check the operation status on PC and mobile in real time, and remote control is possible in case of trouble. With Ethernet, you can manage multiple printers with a single PC. It also boasts the world's first 'automatic supply' function for loading filament to prevent nozzle clogging. Other features include: assisted bed leveling, a wide selection of connectivity options, and a 5-inch touch panel with intuitive interface.



Sindoh 3WOX DP201 3D Printer

\$1299

The DP201 is compatible with educational CAD apps. It has a reliable flexible print bed. The PLA filament is a 100% biodegradable filament made of renewable resources which fits into a refillable and reusable cartridge. The DP201 comes integrated with a camera and LED lights which allows close monitoring of the 3D printing process. It also boasts fully automated cartridge loading and assisted bed leveling.



Sindoh 3WOX1 3D Printer

\$1499

The 3WOX1 features an open source filament mode that allows use of other filament brands. It has a flexible metal print bed plate that enhances safety and adhesion. It also comes with a HEPA filter that helps absorb any dust created during printing. Other features include: fully automated cartridge loading, remote monitoring capability, and assisted bed leveling.



Sindoh 3WOX 2X 3D Printer

\$3499

The 2X's two nozzles work interdependently, achieving the highest efficiency possible and allowing the creation of multicolor, multi-material models as well. Like all of Sindoh's 3D printers, it comes with a flexible print bed, print monitoring capability, and assisted bed leveling. The 2X boasts HEPA filters, voice guidance to help with the printing process, and the largest build size of all Sindoh 3D printers.

Sindoh 3WOX 1X 3D Printer

\$1499

The 3DWOX 1X, you can print PLA, ABS, Flexible materials and with the Open Material feature, you can expand your 3D printing possibilities. The new flexible metal heating bed allows for both easy detachment and firm adhesion of printed pieces. The 3DWOX 1X also features quiet printing, active bed leveling, voice guidance to assist you throughout your printing experience with notifications and instructions, remote monitoring, and compatibility with SolidWorks, SolidWorks Apps for Kids, and TinkerCad.



Sindoh 3WOX 7X 3D Printer

\$14,999

Need to print a large model? The 3DWOX 7X is an industrial grade 3D printer with a maximum build size of 14.9 x 15.4 x 17.7 inches. Two independent dual nozzles and two cartridges provide better performance. This allows not only a two color blend but also a two material combination that enables a variety of outputs to fit your design. Apart from PLA and ABS, the 3DWOX 7X can print Flexible material. The 7X features Direct Mode which enhances the print quality of the Flexible material and an internal insulation that improves the quality of the ABS output. You can also use the water soluble PVA material for high-level PLA printouts. The 7X is equipped with a voice support user guide function for more convenient use, an auto-bed leveling sensor, a heat-conductive and flexible build plate that ensures easy removal and strong adhesion of any print, and four H13 grade HEPA filters.



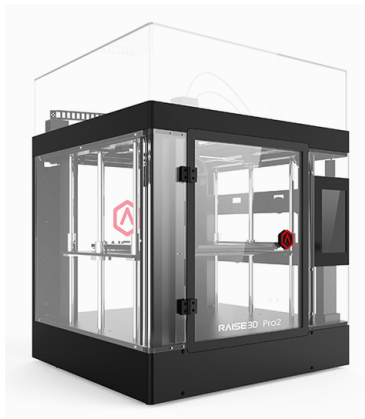
Sindoh A1+ SLA 3D Printer

\$9999

The A1+ is a high precision SLA 3D printer. With a max build size of 7.9 x 7.9 x 7.1 inches, it enables simultaneous printing of different sizes and shapes. It can print with Sindoh proprietary resins, as well as other SLA resins - you can select these on the slicer to get the resin-specific optimal printing settings. Instead of a vector method, you can choose a unique scanning method to accelerate the print speed, especially when utilizing the full bed size. A safe and convenient auto resin supply feature alerts you when levels get low and will auto-feed resin into the resin tank from the cartridge by auto-pumping resin. Other features include web monitoring and an intuitive graphic user interface.



3D Printers - High Quality Fused Deposition Modeling



Pro2 3D Printer

\$3999

Competitive and scalable, the Pro2 features dual extruders, a large build volume in an enclosed high-strength aluminum frame. It also has multi-material compatibility for temperatures of 300°F, a 7-inch full-color touchscreen, an integrated battery, wireless printing and best in class motion control capability.



Pro2 Plus 3D Printer

\$5999

Born from the drive for absolute quality, the Pro2 Plus refines 3D printing for production-grade environments. Upgrading and evolving traditional manufacturing. The Pro2 Plus features dual extruders, a massive build volume, diverse filament compatibility (300°F), resume print after a power outage, a 7-inch full-color touchscreen, and wireless compatibility.

3D Printers - Metal and Carbon Fiber



Desktop Metal Fiber™

Industrial-grade composites, featuring continuous carbon fiber and fiberglass tape for unrivaled part strength in an affordable printer. Extended warranty and 3-year materials packages are available exclusively for educational institutions, and designed for peace of mind. Perfect for aerospace-grade parts for student competitions.



Desktop Metal Studio System™

Classroom-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.

3D Print Cleaning Station

Water Soluble Cleaning Station

\$1599



The budget-friendly, high-performance soluble support removal. The Water Soluble Cleaning Station utilizes a patented "heat, agitation, and flow" technology to efficiently remove support material from FDM or FFF 3D printed pieces.

- Single touch automated control
- Multi-temp for different materials (PLA, CPE, Nylon)
- Recessed "no drip" top
- Interior parts basket
- Basket self-drains into tank
- Machine dimensions: 23.5-in x 21.5-in x 19.25-in
- Inside tank dimensions: 12-in x 10-in x 11-in
- Power requirements: 115V, 15 AMP
- Capacity: 1200 cubic inch, 5.5 gallon

3D Printers - Quick Glance

3D Printer	Model	Technology	Build Size	Cost
Sindoh	DP200	Fused Filament Fabrication	7.3 x 7.9 x 7.9 inches	\$1299
	DP201		7.4 x 7.9 x 7.9 inches	\$1299
	3DWOX1		7.7 x 8.3 x 7.9 inches	\$1499
	1X		8.9 x 7.9 x 11.8 inches	\$1499
	7X		14.9 x 15.4 x 17.7 inches	\$14,999
	2X		11.8 x 8.9 x 7.9 inches	\$3499
	A1+	Selective Laser	7.9 x 7.9 x 7.1 inches	\$9999
Raise 3D	Pro2	Fused Filament Fabrication	12 x 12 x 11.8 inches	\$3999
	Pro2 Plus		12 x 12 x 23.8 inches	\$5999

3D Printers - High Precision Digital Light Processing



Desktop 3D Printers

Just because it sits on a desk doesn't mean our line of desktop 3D printers is like other cheap tabletop models. It's not even close. Our desktop 3D printer family uses advanced DLP technology backed by more than a decade of development and exclusive patent-protected processes. We offer build sizes up to 71.7 cubic inches and accuracy levels down to 30-microns. The printers in this family are powerful tools used by thousands of professionals worldwide.



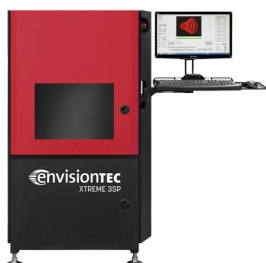
Micro Plus Series

- The smallest personal desktop 3D manufacturing systems
- The Micro Series can produce small engineering components requiring high precision
- Long life LED DLP light source with zero maintenance and very low acquisition cost
- Ideal for educators, consumers, and design professionals
- Resolution and surface finish remains constant over the entire build area
- Applications
 - Jewelry
 - Dental
 - Consumer goods
 - Education
 - Medical devices
 - Manufacturing



Please contact us for pricing and product specification details.

Xtreme 3SP and Xede



- 3SP (Scan, Spin, and Selectively Photocure) technology quickly prints highly accurate parts from STL files
- Large build area makes these models the first choice for the automotive and aerospace industries as well as high-production facilities
- Fast build speeds are ideal for service bureau or OEM customers
- Constant build speed and quality regardless of geometry or number of parts
- XY resolution of 100-microns and a Z resolution range from 50- to 100-microns (material dependent)

Please contact us for pricing and product specification details.

3D Printers - Material Categories



- Prototyping
- Dental
- CE-Approved
- Medical
- FDA-Cleared
- Biocompatible
- Hearing Aid
- Bioprinting
- Health Canada
- End Use
- Castable
- Jewelry
- High Detail
- Mold/Tooling
- High Speed
- cDLM
- Perfactory
- Materials
- 3SP Materials

Material	DLP	3SP	Applications
ABS Flex White	X	X	Extremely flexible, general purpose
ABS Hi-Impact	X	X	Tough material, high-quality prototyping (i.e. automotive, end use)
ABS Tough	X	X	Extremely tough, general purpose
E-CE (Cyan Ester)	X		Dual-cure material for stiff, heat-resistant parts
E-Clear	X		Prints strong, water-resistant parts (i.e. custom hearing aids)
E-Denstone	X	X	Specific for rapid production, highly accurate, scannable dental molds
E-Glass 2.0	X	X	Excellent for simulating clear plastics
E-Model	X	X	Tough material, high quality prototyping and dental/orthodontic models
E-Poxy	X		Dual-cure material for strong, thin-walled parts
E-RigidForm	X	X	High tensile strength, industrial and consumer applications
E-Rigid PU		X	Polyurethane-like resin for end-use and prototype parts
E-Shell 200/300 Series	X		Medical-grade, opaque skin tones or transparent for visual aids
E-Shore A	X		Polyurethane-like material for durability, comfort and flexibility
E-Tool 2.0	X	X	Strong, ideal for molds for thermoplastic injection molding
HTM 140 V2	X		High-temperature molding, nonmetal masters
LS600	X		General purpose, durable and accurate with fine details
Q-View	X		Quick building for fast design verification
Pro Gray	X		Robust and durable parts that are accurate and functional
R5/R11 Series	X		Master models, mimics polypropylene for rubber molding

EnvisionTEC offers a range of high-performance materials to cope with most applications required by industry, including wax-filled resins used for direct casting applications, high-temperature resistant ceramic-filled resins, and highly accurate general purpose resins for functional end results. For more information and a complete list of EnvisionTEC's materials, visit <https://envisiontec.com/3d-printing-material/>.

3SP Materials

- ABS Flex White
- ABS Hi-Impact
- ABS Tough
- E-Denstone
- E-Rigidform
- E-Glass 2.0
- E-Model
- E-Rigid PU
- E-Tool 2.0
- Formcast Powered by Somos

cDLM Materials

- E-Dent 400
- E-Denture
- E-Guard
- E-Model
- Pic 100 Series
- Easy Cast 2.0 C
- Q-View

Perfactory Materials

- ABS Flex White
- ABS Hi-Impact
- ABS Tough
- E-CE (Cyan Ester)
- E-Dent 400
- E-Clear Series
- E-Dentstone
- E-Dent 100
- E-Guide Tint
- E-Denture
- E-Glass 2.0
- E-Guard
- E-Silicone
- E-Model
- E-Gum
- E-IDB
- E-Orthoshape
- E-Rigidform
- E-Partial
- E-Poxy Series
- E-Rigid PU
- E-Shell 200, 300, 500, 600, 3000 Series
- E-Shore A
- E-Tool 2.0
- EC500, EC3000
- WIC100G
- EPIC
- HTM 140 V2
- LS600
- Photosilver
- Pic 100 Series
- Pro Gray
- Press-E-Cast
- Q-View
- R5, R11
- RC Series

Subtractive Rapid Prototyping



monoFab SRM-20

\$4995

The SRM-20 offers compact size and powerful functionality at an affordable price. Production of realistic parts and prototypes is made simple and convenient with a device that fits into any office, home, or classroom environment. For users looking for advanced milling capabilities without the need for expert operating skills, the SRM-20 is the easiest and most precise CNC mill in its class and can mill in a broad range of materials, including *modeling wax, chemical wood, foam, acrylic, polyacetate, ABS and PC board*.

Workpiece table size: 9.14-inches (X) x 6.17-inches (Y)



Modela MDX-50

\$10,995

The MDX-50 benchtop CNC mill combines precise, automated milling and unmatched ease-of-use which makes it an ideal solution for short-runs and prototypes. It reduces operating time and simplifies production so users of all abilities can mill on a wide range of materials that include *woods, composites, prototyping foam, mechanical plastics and resins*.

Expanded machining area: 15.8-inches (X) x 12-inches (Y) x 5.3-inches (Z)



Rotary Axis (Optional)

\$3999

Precision CNC Bed Mill



**Enclosed
or
Open**



Rigid Fixed Gantry with Moving Bed Available in the Following Sizes

- 2' x 20" -2.2
- 2' x 20" -5
- 2' x 20" -10
- 2' x 20" -5 ATC Enclosure
- 3' x 20" -2.2
- 3' x 20" -5
- 3' x 20" -10
- 3' x 20" -5 ATC Enclosure
- 4' x 20" -2.2
- 4' x 20" -5
- 4' x 20" -10
- 4' x 20" -5 ATC Enclosure

OPTIONS:

- 6" 4th Axis with Tailstock
- Machinist Kit with T-Slot Clamping, 5" Vise, Collet Set
- 4 Position ATC Closed-Loop Hybrid Servo
- Spindles: Collet Style, Quick Change, ATC (Automatic Tool Changer)

CNC Routers



FabBot Desktop Series CNC Router Models

Created for home shops and schools on a limited budget, these machines come with a 3-year limited warranty, personalized online training, and unlimited phone and online tech support. These models include an aluminum T-slot table, hold downs, 1-3/4HP router, wrenches, CAD/CAM software, and a starter set of bits. Operates on 110V 15A.



FabBot 24" x 18" x 6"	\$7499
Optional Enclosure with Stand	\$1799
Optional Removable Vac Table Syst2418	\$1999
FabBot 24" x 24" x 6"	\$7999
Optional Enclosure with Stand	\$1999
Optional Removable Vac Table Sys2424	\$1999
FabBot 36" x 24" x 6"	\$8499
Optional Enclosure with St	\$2499
Optional Removable Vac Table Sys3624	\$2499

FabBot ATC CNC Router

Applications

- Sign Making
- Plastics Fabrication
- Furniture Making
- Model Making
- Education

The FabBot ATC CNC Router comes fully assembled with a 1.5HP high frequency ATC spindle and 6 pos ATC.. Its heavy-duty construction includes THK linear rails and bearings. Popular features include 3D 3-axis continuous contouring, on-screen simulation, compatibility with most CAD/CAM systems and industry standard G-codes.



FabBot ATC 38" x24" x6" TurnKey w/Standard Enclosure Computer

\$16,999



OPTIONS:

• 6" Rotary 4th Axis	\$3999
• Vacuum Table	\$2499
• Digital Reverse Engineering Probe	\$2999
• Wireless Handheld MPG Jog Pendant	\$599
• Quiet Air Compressor	\$699
• Dust Collection System	\$995
• Custom Sizes and Spindles	Call for pricing



Maker-Fab Series Router Models

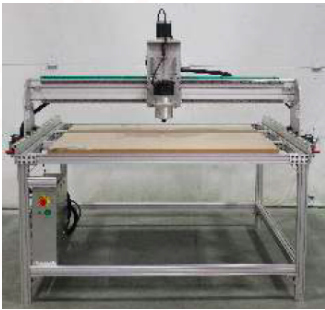
The Maker-Fab Series Router models include a standard MDF table, 3-1/4 HP router, wrenches, a welded steel stand, dust hood, and a starter set of bits that can operate on 110V 20A. 8.5" Z Travel. The floor space is about 2-feet larger than the work area.



RMF 24" x 20" (fits through 36" door)	\$14,999
RMF 48" x 20" (fits through 36" door)	\$16,999
RMF 48" x 48"	\$19,999
RMF 48" x 96"	\$23,999
RMF 60" x 120"	\$28,999

Titan Series CNC Router Models

The Titan Routers are cost effective heavy duty machines made of structural aluminum. These models include a standard table, 3-1/4HP router, wrenches, an aluminum frame, dust hood, and a starter set of bits. Operates on 110V 20A. 8.5" Z Travel. The floor space is about 2-feet larger than the work area. This is a great model for upstairs locations and other installations requiring special handling since they are lighter weight than steel.



TitanR 24" x 20" (fits through 36" door)	\$11,999
TitanR 48" x 20" (fits through 36" door)	\$13,999
TitanR 48" x 48"	\$16,999
TitanR 48" x 96"	\$19,999
TitanR 60" x 120"	\$24,999

Michaelangelo 3D Modeler

The Michaelangelo 3D Modeler is an innovative CNC router designed for classroom use (Tech Ed, Drafting, Woodworking, Art) and includes a vacuum table system and dust collection system with a maximum fully-enclosed size able to fit through a 36" door.



Michaelangelo Stepper Version X=35" Y=13.5" Z=8.5"	\$22,999
Michaelangelo Servo Version X=35" Y=13.5" Z=8.5"	\$24,999
Michaelangelo Pro* X=35" Y=20" Z=8.5"	\$29,999

*The Michaelangelo Pro includes a 2.2HP High Frequency Spindle and greater Y travel. It will *not* fit through a 36" door.

Industrial CNC Routers



HS Series Router

The HS Series Router models are the standard model for education and small shops. These models are ideal for a serious cabinet making program and include a standard MDF table, 3-1/4HP router, wrenches, a welded steel stand, dust hood, and a starter set of bits that can operate on 110V 20A. The floor space is about 2-feet larger than the work area. These routers also feature Closed Loop Hybrid Servo Technology for reliable rapid speeds in excess of 500 IPM.



• HS 24" x 24"	\$19,999
• HS 48" x 24"	\$21,999
• HS 48" x 48"	\$25,999
• HS 48" x 96"	\$29,999
• HS 60" x 120"	\$33,999
• HSFV-ATC 4' x 4' 5HP, 8 position ATC	\$41,999
• HSFV-ATC 4' x 8' 5HP, 8 position ATC	\$45,999
• HSFV-ATC 5' x 10' 5HP, 8 position ATC	\$49,999

UPGRADES

Vacuum Table Systems Includes Pump and Table

24X24 Vac System 110V	\$2500
48X24 Vac System 110V	\$3500
48X48 Vac System 220V 3PH	\$4500
48X48 Vac System 110V	\$6500
48X96 Vac System 220V 3PH	\$5000
48X96 Vac System 110V	\$8500
60X120 Vac System	\$8000
Vac Table System Added Later	\$1500

Aluminum T-Slot Table Upgrades

48x20 or 24 T-Slot Table	\$1395
48x48 T-Slot Table	\$2495
48x96 T-Slot Table	\$3100
60x120 T-Slot Table	\$4300

Spindle Upgrades

2.2HP 1PH HF Spindle	\$2500
5HP 3PH HF Spindle	\$3500
10HP 3PH HF Spindle	\$5900
5HP Manual Quick Change Spindle	\$10,500

Guitar Making CNC Routers



Guitar Making CNC Router Models

The LuthierMax Series of CNC Routers was designed in collaboration with engineers from Fender® Guitars (who also use this model), and www.guitarbuilding.org. Student-friendly and robust, this machine features fixtures built into the table, making it easy to machine your own guitar necks and bodies for both standard size and longer base guitars. This is the largest fully assembled CNC router that fits through a standard 36" classroom door. Travels X=49" Y=20" Z=8.5" Floor space approximately 76" x 34" All models (except ATC model) use 110V normal wall outlet electric.

LuthierMax CNC Router 110V 20A	\$16,999
Optional Vacuum Table System	\$3500
Optional Guitar Making Class Start-up Kit	\$2999
Optional Guitar Making CNC Bit Kit	\$500

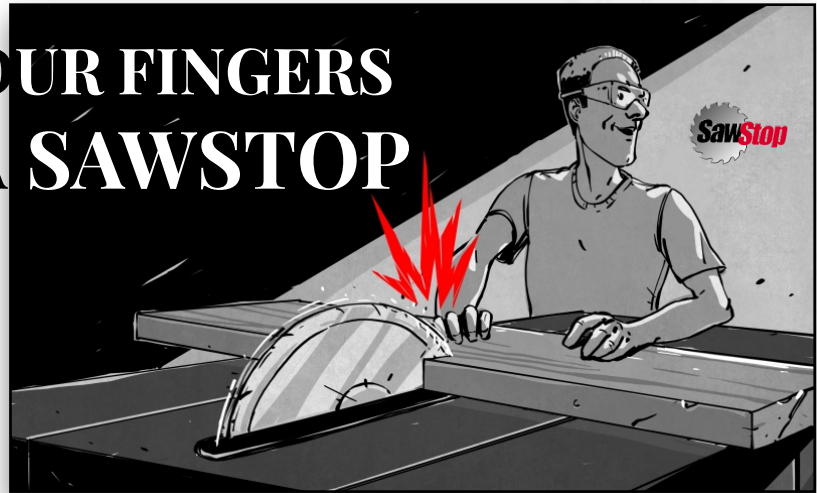
Table Saws

KEEP YOUR FINGERS INVEST IN A SAWSTOP

Unparalleled Safety.

Precision Cut. Every Cut.

Engineered for Woodworkers.



Jobsite Saw

(from) **\$1299**

The SawStop Jobsite Saw unites SawStop Safety and pioneering innovation with compact portability. The promise of SawStop safety, quality and peace of mind can travel with you wherever you go. The Jobsite Saw features One Turn Elevation, QuickTilt, Micro Adjust, T-style fence with ErgoLock, fence holster, low profile blade guard, pedal release, large wheels, control box, Tool-Free Zero-Clearance insert, accessory storage drawer and extension clamp.



Industrial Saw

(from) **\$3899**

The SawStop 10" Industrial Cabinet Saw is the reference by which all other saws are measured: precision and heavy-duty construction, the revolutionary safety feature that has made SawStop famous, and 99% dust collection system that's second-to-none. Model options are the Industrial 36" and the Industrial 52". Models come with cast iron Extension Wings, miter gauge, dust collection blade guard, riving knife, blade wrenches, push stick, 10" blade, standard brake cartridge, hardware packs, 3mm hex key, 5mm hex key, 8mm hex key, and blade spacing adjustment gauge.

Woodworking Equipment



Band Saws



Lathes



Drill Presses



Jointers



Sanders



Panel Saws



Grinders



Planers



Miter Saws



Shapers



Scroll Saws



Mortisers

Metalworking Equipment



Slip Rolls



Band Saw



Drill Presses



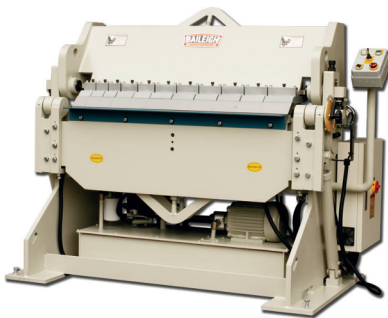
Miter Saws



Cut-Off Saws



Grinders



Hydraulic Brakes

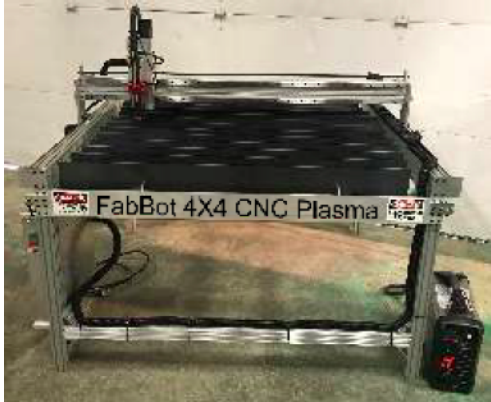


Box & Pan Brakes



Press Brakes

CNC Plasma Cutters



FabBot Platform Series Plasma Models

Each of the CNC Plasma Cutters include CAD/CAM software, Auto Torch Height, Hypertherm 45 Plasma System, and training tutorials. 110V 20A machine, 240V 50A plasma cutter. The floor space is about 2-feet larger than the work area.

FabBot 48" x 20" (fits through 36" door)	\$12,999
FabBot 48" x 48"	\$13,999
FabBot 48" x 96"	\$15,999

Convert-A-Table CNC Router/Plasma Models

CAT 24" x 20" (fits through 36" door)	\$19,999
CAT 48" x 20" (fits through 36" door)	\$23,999
CAT 48" x 48"	\$26,999
CAT 48" x 96"	\$29,999

Convert-A-Table easily changes from a CNC Router to a CNC Plasma Cutter. This is a great option if you have very limited space and only need one function at a time. Please note that these machines cannot have a vacuum table system due to the conversion between router and plasma. This heavy-duty frame can plow through wood with the robust 3-1/4HP router while the water table is sealed off. Remove the router table and you have the water table for plasma cutting. No other machine is designed to correctly do both routing and plasma cutting. Conversion between the two functions takes less than ten minutes!



Titan Series Plasma Models

The Titan Plasma Cutters are cost effective heavy-duty machines made of structural aluminum and come standard with a water table. The floor space is about 2-feet larger than the work area. This is a great model for upstairs locations and other installations requiring special handling since they are lighter weight than steel.

TitanP 24" x 20" (fits through 36" door)	\$15,999
TitanP 48" x 20" (fits through 36" door)	\$17,999
TitanP 48" x 48"	\$19,999
TitanP 48" x 96"	\$22,999
TitanP 60" x 120"	\$24,999

Maker-Fab Series Plasma Models

The Maker-Fab Plasma Cutters are cost effective heavy-duty machines made of a welded steel frame with an integrated Water Table. The extra rigidity is great for handling the abuse of students and will last for many years.

PMF 24" x 20" (fits through 36" door)	\$18,999
PMF 48" x 20" (fits through 36" door)	\$21,999
PMF 48" x 48"	\$24,999
PMF 48" x 96"	\$27,999
PMF 60" x 120"	\$29,999



Industrial CNC Plasma Cutters

HS Series Plasma Models

The HS Series Plasma Cutters are heavier duty machines made with a larger tubular welded steel frame with an 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.

These plasma tables have replaceable leafs that you can easily make by shearing steel so you won't need to buy expensive table parts and pay to ship them across the country.

HSPB 24" x 24"	\$24,999
HSPB 48" x 24"	\$26,999
HSPB 48" x 48"	\$29,999
HSPB 48" x 96"	\$33,999
HSPB 60" x 120"	\$36,999



Hypertherm Plasma Cutter Upgrades

Powermax 45	Pierce 1/2" steel and cut up to 7/8" cut - Best Option for Most Schools	Comes Standard
Powermax 65	Pierce 5/8" steel and cut up to 1" cut	\$1000
Powermax 85	Pierce 3/4" steel and cut up to 1-1/2" cut	\$2000
Powermax 105	Pierce 7/8" steel and cut up to 2" cut (Requires 480V)	\$4000

Options

8" Pipe Cutter 4th Axis with Advanced Pipe Cutting Software	\$7500
Plate Marker	\$2597
HVAC CAD/CAM EDU Stand Alone License	\$6000
HVAC CAD/CAM EDU Stand Alone License with a Machine	\$2500

Clean Room CNC Plasma Cutters

CRP Clean Room Metal Torch

This fully-enclosed plasma cutter is a cost-effective alternative to a \$600K laser with near laser quality to fine-cut up to 1/4" steel and cut through 5/8" steel. It can also handle low resolution metal marking and cutting of aluminum, copper and brass.

CRP2418 24" X 18" Y	\$39,999
CRP3618 36" X 18" Y	\$49,999
CRP48X24 48" X 24" Y	\$59,999

Optional In-Room Filtration System	\$7999
Optional Ultra Quiet Dry Air Compressor	\$3999
Converter to run 45A Plasma on	\$495



ADDITIONAL FEATURES:

- Downdraft grid table and ports to exhaust fumes outside or to a filtration system
- Closed-Loop Hybrid Servo Control System
- 110V or 240V operation requires compressed air system
- Automatic torch height
- Automatic voltage detection current set from computer
- Includes fine, marking and standard cutting consumables



CNC Water Jet Cutters

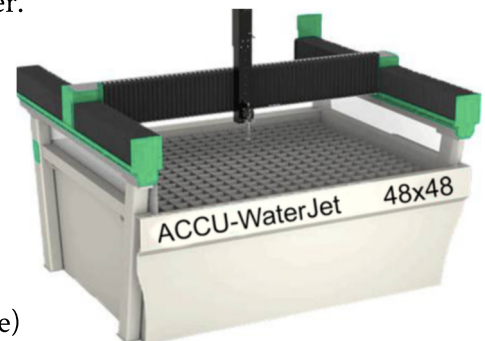
ACCUJet Series Water Jet Models

Featuring a hypertherm cutting head, the ACCU Jet Series WaterJet can cut with water or abrasive. It can cut silicon, stainless steel, titanium, aluminum, wood, acrylic and rubber.

48X24 WaterJet 30 50" X 26" Y (12'x12' est floor space)
48X48 WaterJet 30 50" X 50" Y (12'x14' est floor space)
48X96 WaterJet 30 50" X 98" Y (12'x18' est floor space)

Priced from \$59,000

Optional Bladder Tank for quick water height adjustment
Optional 15325 WaterJet Boost Pump (if less than 60 PSI water pressure)



Desktop Water Jet Cutter

WAZER



The First Desktop Water Jet Cutter

Wazer can cut any material with digital precision. Professional-grade manufacturing for every workshop. It is the first desktop water jet that cuts any hard or soft material. The high velocity jet uses a combination of high pressure water and sand-like abrasive particles to cut through the work piece.

- **Wazer Desktop**
 - Wazer + Pump Box **\$7,999**
- **Wazer Standup**
 - Wazer + Pump Box + Stand **\$8,999**
- **Starter Bundle**
 - Wazer Standup + 2200-lb Pallet of Abrasive + 3 Pack Cut Beds + Extra Nozzle **\$9,999**

Materials

- Marble
- Boro Glass
- Aluminum
- Tool Steel
- Low Carbon Steel
- Stainless Steel
- Silicone
- HDPE
- Carbon Fiber

Specifications

- Cutting Area 12" x 18"
- Cut Bed Size 13" x 19"
- Kerf (width of cut) 0.44 (1.2 mm)
- Water Source Tap water (water recirculation not recommended)
- Water Draining Standard water drainage
- Input Water Filter ~300 mesh
- Abrasive Flow Rate 0.33 lbs/min (150 g/min)
- Abrasive Capacity 30 lbs (13.5 kg)
- Abrasive Type Garnet 80 mesh

LiveArc™ Welding Performance Management System



The most complete live arc welding training system. LiveArc provides both a simulation/pre-weld set-up mode as well as a live-arc training mode, allowing the user to gain experience and build techniques in pre-weld exercises before seamlessly transitioning into real welding on GMAW (MIG), FCAW (flux-cored) and SMAW (stick) processes.



Priced from \$54,200

Miller AugmentedArc® Augmented Reality Welding System

The industry's most realistic welding simulation solution available for beginner to advanced weld students and classroom training. Experience an augmented reality environment without using an actual arc or consuming wire, shielding gas or coupons.



Simulates multi-process **GMAW (MIG)**, **FCAW (flux-cored)**, **SMAW (stick)** and **STAW (TIG)** welding.

Priced from \$27,000

Welding



MIG Welders



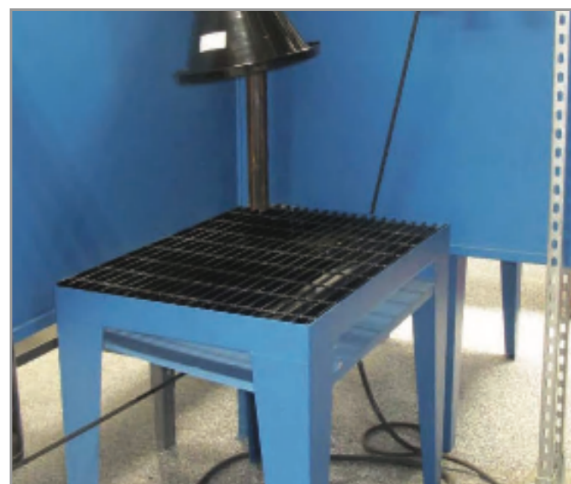
TIG Welders



Stick Welders



Welding Stations/Booths



Welding Booths

Our welding booths are an industry standard for industrial and educational facilities. Our booths are constructed using all-welded heavy gauge tube steel with non-conducting fire resistant panels. Booth doors are available with full strip curtain doors, partial viewing windows on all sides. Available in multiple sizes and configurations to meet your project requirements.

Features:

- All welded construction
- Safety curtain surround
- Multiple size options
- Designed for longevity
- Variable work spaces
- Constructed of heavy-gauge steel



Ventilation and Tables



Ventilation

We offer adjustable collection arms, overhead exhaust hoods, downdraft systems, ducted exhaust systems, and collection units.



Welding, Layout and Grinding Tables

Welded heavy gauge steel construction with a variety of work surface configurations allow us to build the perfect table for even the toughest environments.

Models for gas welding feature fire brick work surfaces. Arc, MIG and TIG welding tables are available with replaceable grate surfaces and solid plate steel tops up to 3/8" thick. We offer both free-standing and booth-mounted table options in a variety of configurations.

Our tables are offered with combination surfaces that provide a versatile work area when multiple types of welding processes are being used.

Automotive Technician Training



NATEF CURRICULUM Automotive Technician Training

1. Automobile

- a. Electrical/Electronic Systems
- b. Engine Performance
- c. Suspension and Steering
- d. Brakes
- e. Heating and Air Conditioning
- f. Automatic Transmission and Transaxle
- g. Manual Drive Train and Axles
- h. Engine Repair

2. Medium/Heavy Truck

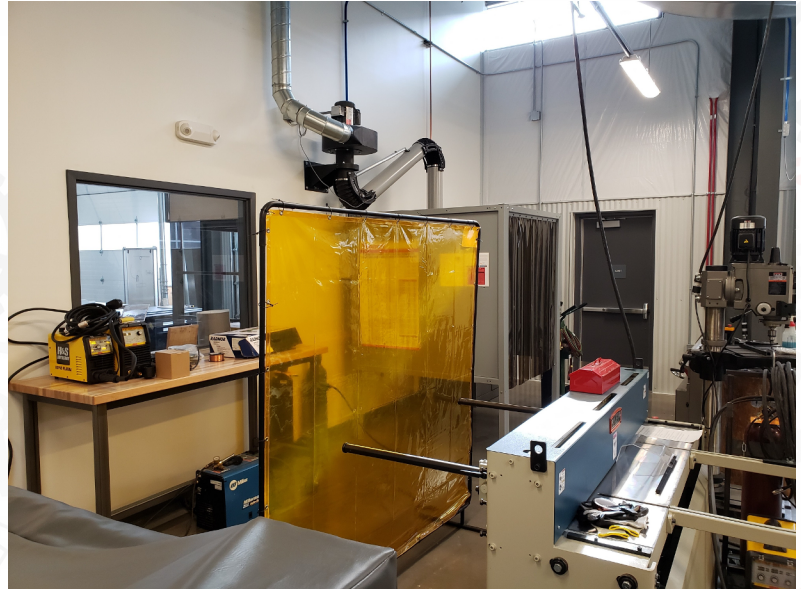
- a. Diesel Engine
- b. Brakes

* Certification programs are also available and covers all the requirements to meet ASE certification.

Please contact us for individual module and/or complete package pricing or for a full catalog.

PROJECT SHOWCASE

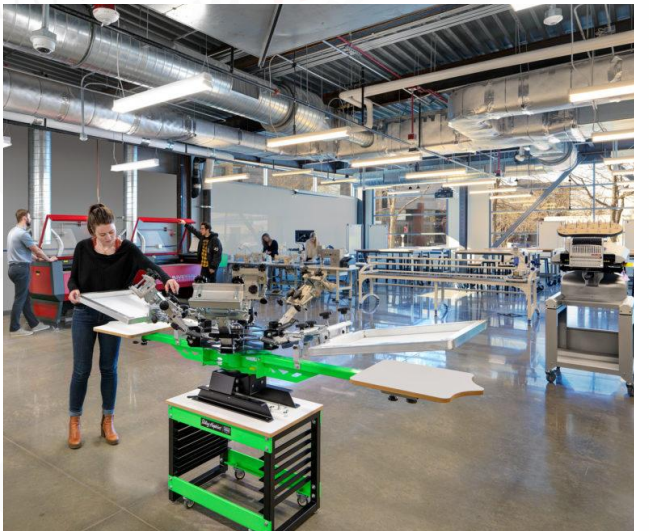
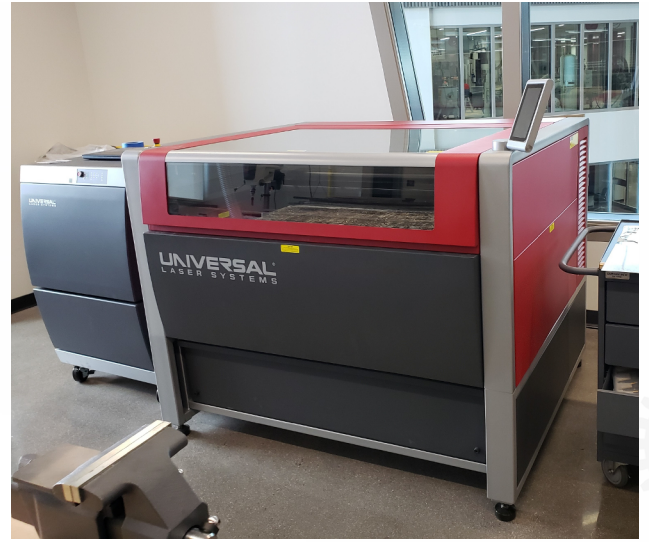
Here are some spaces we've helped create...



Colorado State University



Cherry Creek Innovation Campus



What are you waiting for?
Turn your fab lab into a **FAB** Lab!



Don't just take our word for it.



Technology that will develop employable skills

"Career and Technical Training understands the educational environment and the various ways funds are allocated. Their knowledge of current industry trends allows them to give guidance on technology that will develop employable skills in students."

Phil Johnston
Central High School
Mesa County Valley School District 5

Unsurpassed

"The support we received with the implementation of the laser to our program has been unsurpassed. CATT has been instrumental with set-up, training, and follow-up."

Joe Ramunno
Palisade High School
Mesa County Valley School District 51

Our students and community couldn't be more excited

"We teamed up with CATT for our middle school sTEM Center re-branding and upgrade, and our students and community couldn't be more excited. We use the R&D Lab in conjunction with our woods and metal manufacturing shops to create the full 'design build' experience. The students use the laser, the Forest Scientific CNC router and the Roland vinyl sign maker to increase their project based learning productivity through integration with the woods and metal shop."

Marc A. Finer
Isaac Newton Middle School
Littleton School District 6

They have always taken care of my lab needs

I cannot say enough wonderful things about Jeff and the entire CATT team. From their no pressure sales, to top-notch customer service, they have always taken care of my lab needs and the needs of the other schools in our district."

Larry Grimes
Euclid Middle School
Littleton School District 6

FABLIGHT METAL LASER CUTTER



FEATURES:

- Flexible and powerful sheet metal laser cutter equipped with an industrial-quality IPG fiber laser and precise mechanical control
- Laser beam spot size of 0.004-in (0.1mm) produces cutting accuracy of ± 0.002 -in/foot (0.15mm/m)
- Fits 25" x 50" sheet with a small footprint
- Software included
- Option of one of three IPG laser sources depending on intended use case
- Fully-enclosed Class I chassis
- Laser source is air-cooled and requires no special chiller
- Includes HEPA filter dust collector and requires no external ventilation or ductwork
- All models run on a 110V, 20A outlet
- Costs less than \$1/hour to run continuously



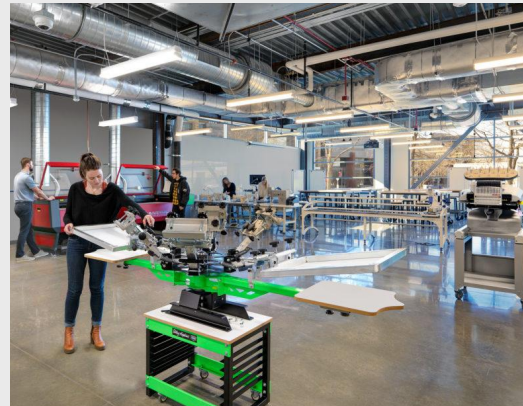
CAREER AND TECHNICAL TRAINING, LLC

Building a New School?

Our white glove service can help you with everything from product selection, to on-site set-up and training!

Select ala carte from our catalog or we'll set up a complete lab to meet your budget and needs.

- Laser Engraving Station
- Large Format Printer/Cutter Station
- 3D Printer Station
- CNC Router Station
- Woodworking Station
- Metalworking/Welding Station
- SOLIDWORKS Station



These are the tools that will help your students move beyond consumption and into creation!

Let's get started today: 1-888-686-0379

