



River Valley Advanced Manufacturing Institute

"An employer-focused, advanced manufacturing and workforce development institute serving the Connecticut River Valley Region of Vermont and New Hampshire"

Rationale:

Regional manufacturing companies are experiencing one of the most significant labor shortages in more than 40 years. Perspective new hires do not possess the basic, entry-level skills required to be considered "value-added" to companies and incumbent workers lack the training and education necessary to allow them to advance within their current companies at an acceptable rate. Exacerbating the problem is a lack of "qualified" training programs that focus specifically on manufacturing. The **River Valley Advanced Manufacturing Institute** is uniquely positioned to meet all three of these documented needs, while also helping companies develop and implement continuous improvement plans into their training and advancement models.

Outcomes and Deliverables:

The **River Valley Advanced Manufacturing Institute** seeks to deliver, high quality, industry relevant training in several related fields. Each training program will incorporate carefully measured and assessed outcomes with 3-party, industry recognized credentials like the Certified Manufacturing Associate, Certified SolidWorks Associate and National Institute for Metalworking Skills (NIMS) Level 1 credentials. College credit through Vermont State University and/or The Community College of Vermont will also be a viable option for some learners. It is **highly recommended** that learners take all three courses listed below but accommodations can be made for more targeted training.

Target Demographic:

- Unemployed or underemployed residents of either New Hampshire or Vermont that live within 50 miles of the River Valley Technical Center.
- Incumbent workers who are not progressing with their "on-the-job" training as quickly as needed by their employer.
- Adult manufacturing apprenticeship participants who are seeking their 150-hours or related academic instruction.
- Recent high school graduates who have are not attending college and who have not secured a full-time job that pays a "livable wage".

Time Frame:

- **Manufacturing Processes and Blueprint Reading with Certification**
 - Certified Manufacturing Associate (SME) and NIMS Level 1 (Manual Machining) Certificates
 - 15, 3-hour sessions, 45-Hours Total
 - Mondays and Thursdays from 3:30 to 6:30 p.m., ***Sept. 25, 2023, thru November 16, 2023**
 - **SolidWorks Certification**
 - Certified SolidWorks Associate and/or Certified SolidWorks Professional
 - 15, 3-hour sessions, 45-Hours Total
 - Mondays and Thursdays from 3:30 to 6:30 p.m., ***November 20, 2023, thru January 25, 2024**
 - **Introduction to Computer Aided Manufacturing (CAM) and Computer Numerical Control (CNC) with Certification**
 - NIMS Level 1 CNC Credentials and Mastercam Certified User Certificate
 - 15, 3-hour sessions, 45-Hours Total
 - Mondays and Thursdays from 3:30 to 6:30 p.m., ***January 29, 2024, thru March 25, 2024**
- *PLEASE NOTE START/END DATE CHANGE**

Course Offerings for 2023-2024:

- **Manufacturing Processes and Basic Blueprint Reading**

This “hands-on” course will introduce students to a wide variety of manufacturing processes. Although heavily focused on traditional machine tools (lathes, mills, grinders, etc.) this course will also explore a variety of both *additive* and *subtractive* processes including casting, welding, molding, industrial cutting (plasma, waterjet, and laser) and 3D printing. Students will work individually and in small groups to produce functional products using today’s manufacturing standards. Safety and skilled operation will be the focal point of this class. A strong emphasis will be placed on learning *blueprint interpretation* skills and applying lean manufacturing concepts that are found in almost every manufacturing facility regardless of size. NIMS Level One Machine Operator certificates in seven areas (Safety, Benchwork, Inspections and QC, Drill Press, Milling, Turning and Precision Grinding) will be the goal for all participants.

- **SolidWorks Certification and GD&T Training**

This course provides a basic understanding of the principles and technology of *mechanical drawing* and *parametric solid modeling* as methods of documenting and communicating mechanical designs. The concepts of *geometric construction*, and *isometric (pictorial)*, *orthographic*, *sectional*, *auxiliary*, and *assembly* views are covered. Dimensioning methods and types of fasteners are introduced. The student gains basic proficiency in using parametric three-dimensional computer-aided design (SolidWorks and/or Fusion 360) programs to build parts, assemblies, and detailed working drawings. Blueprint reading skills and techniques are also reinforced as well as an introduction to Geometric Dimensioning and Tolerancing (GD&T). The *Engineering Design Process* is used as a scaffolding for solving simple and complex design challenges that focus on three-dimensional modeling as well as sketching and other graphic communication techniques. CSWA and CSWP certification will be the goal for all participants.

- **Introduction to CAM and CNC Machining with GD&T Training**

Computer Numerical Control (CNC) is the seamless integration of computer programming and advanced manufacturing. It is the foundation for all additive and subtractive manufacturing found in modern manufacturing facilities today. This course teaches the basics of G-code and Conversational CNC programming as well as how to operate CNC turning, milling, and multi-axis (4th, 5th and “live tooling”) machining centers. Participants will gain “hands on” experience in machine set-up and operation, including creating actual parts. All learners will be eligible to earn up to 4, Level One NIMS CNC Operator, Set-up and Programmer certifications. The NIMS subscription will last one year so learners can return to the RVTC after the course to pursue additional certifications. The Tooling U/SME Certified Manufacturing Associate Certificate (CMfgA) and the [Manufacturing Skill Standards Council’s](#) Certified Production Technician (CPT) are also offered as outcomes of this course. An introduction to Mastercam CAD/CAM and Verisurf CMM Inspection technology will also be incorporated into in this course. Prior experience in manufacturing is recommended.

Enrollment and Course Cost:

A minimum of 8 students is required to run each training course. The cost per student will be **\$900** per class (or **\$2500** for the triad – A \$200 savings). This will include the following:

- All hard copy textbooks, manuals and subscriptions to online services like [Tooling U](#), [Immerse2Learn](#), [Solid Professor](#) and [CamInstructor](#).
- Lab Fee for all materials and consumables (cutting tools, lubricants, etc.)
- Educational versions of software: [SolidWorks](#), [Mastercam](#), [Fusion360](#), [CNC BASE](#), [NCSIMUL](#)
- Forty-five hours of direct instruction and project-based learning.
- Access to certification exams: [NIMS](#), [CMfgA](#), [CPT](#), [CSWA and CSWP](#)
- Instructional support outside of class via Google Classroom or other Learning Management System
- Administrative and *job placement* support during and after the courses are complete.
- Access to the RVTC for future certification testing if necessary.

Please reach out to Christopher Gray, 802-885-8321 (cgray@rvtc.org) or Derek Williams, 802-885-8303 (dwilliams@rvtc.org) for more information.