



# *MassBridge*

Report

On The

Inventory of Existing Manufacturing Training Programs

West Region

January 2021

The ***Report on the Inventory of Existing Manufacturing Training Programs*** for the West Region has been developed by the MassHire Hampden, Franklin-Hampshire, and Berkshire Workforce Boards in collaboration and consultation with the West Region educational institutions and the Western Mass. Chapter of the National Tooling and Machining Association.

The Report is a project deliverable in Year 1 of **MassBridge**, an initiative led by the Massachusetts Executive Office of Housing and Economic Development (EOHED), and the Massachusetts Technology Collaborative with funding from the U.S. Department of Defense.

The development of the Report was informed by data and information obtained from the West Region educational institutions, with technical guidance provided to the West Region MassHire Workforce Boards by additional collaborators and partners.

## OVERVIEW

The *Report on the Inventory of Existing Manufacturing Training Programs* for the West Region has been developed by the MassHire Hampden, Franklin-Hampshire, and Berkshire Workforce Boards in collaboration and consultation with the West Region educational institutions and the [Western Mass. Chapter of the National Tooling and Machining Association](#).

The Report is a project deliverable in Year 1 of **MassBridge** which is a three year initiative to develop and test a well-connected, state-based training and career pathway model - a “Bridge” for technicians that meets the talent needs of the Manufacturing USA Institutes and that can be deployed nation-wide. This effort will design and develop a curriculum “Bridge” that spans the observed gaps between the Massachusetts’ current, state-wide advanced manufacturing training programs and the needs of the Manufacturing USA Institutes.

**MassBridge** is led by the Massachusetts Technology Collaborative in close partnership with the Massachusetts Executive Office of Housing and Economic Development and the following project partners:

- Massachusetts Executive Office of Labor and Workforce Development
- Massachusetts Institute of Technology- AIM Academy and Office of Open Learning
- MassHire Workforce Boards
- Massachusetts Manufacturing Extension Partnership
- Selected Massachusetts Community Colleges, Vocational-Technical High Schools, and State Universities
- Manufacturing USA Institutes

The Report analyzed information and data obtained from a Survey of ten (10) vocational technical high schools and the four (4) community colleges in the West Region that are currently conducting Associate Degree and Certificate level programs in advanced manufacturing technologies and related engineering.

The Report includes **Observations** on the data and information and will be used by the **MassBridge** partners to identify the capacity and infrastructure of the current educational institutions/training providers to develop the advanced curriculum and technical competencies (Level 3) needed by the participating six Manufacturing USA Institutes working in collaboration with their member companies, and other regional advanced manufacturing companies.

The *Report on the Inventory of Existing Manufacturing Training Programs* for the West Region is a part of the West Region’s *Five-Year Manufacturing Plan 2019-2023*, and can be viewed on the respective web sites of the West Region MassHire Workforce Boards.



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No.	Verification	Educational Institution /Training Provider	Educational Program	Educational Program Credential Status		Length of Program/Courses		Target Audience	Recruitment Method
	YES			Credit	Non-Credit	Credit	Non-Credit		
	Edits								
1.	YES	Springfield Technical Community College	Mechanical Engineering Technology	Associate Degree		67-69 Credits		General	Traditional Social Media
2.	YES	Springfield Technical Community College	Optics and Photonics	Associate Degree		67 Credits		General	Traditional Social Media
3.	YES	Springfield Technical Community College	CAD/CAM	Certificate		26 Credits		General	Traditional Social Media
4.	YES	Springfield Technical Community College	CNC Operations	Certificate		26-27 Credits		General	Traditional Social Media
5.	YES	Springfield Technical Community College	Electrical/Robotics Technology	Certificate		24 Credits		General	Traditional Social Media

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6.	<b>YES</b>	Springfield Technical Community College	Optics and Photonics	Certificate		29 Credits		General	Traditional Social Media
7.	<b>YES</b>	Greenfield Community College	Engineering Technology	Certificate		24-27 Credits		General	Traditional Social Media
8.	<b>YES</b>	Greenfield Community College	Engineering Technology	Varied		3-4 Credit Courses		General	Traditional Social Media
9.	<b>YES</b>	Holyoke Community College	Engineering Studies, Engineering Option	Associate Degree		60-70 Credits		General	Traditional Social Media
10.	<b>YES</b>	Holyoke Community College	Engineering Studies, Engineering Science Option	Associate Degree		60-64 Credits		General	Traditional Social Media
11.	<b>YES</b>	Berkshire Community College	Engineering	Associate Degree		66 Credits		General	Traditional Social Media
12.	<b>YES</b>	Berkshire Community College	Mechatronics	Associate Degree		66 Credits		General	Traditional Social Media

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13.	YES	Westfield Technical Academy	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
14.	YES	Chicopee Comprehensive High School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
15.	YES	Pathfinder Regional Vocational Technical High School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
16.	YES	William J. Dean Technical High School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
17.	YES	Smith Vocational and Agricultural High School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
18.	YES	Roger L. Putnam Vocational Technical Academy	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	

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19.	<b>YES</b>	Franklin County Technical School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
20.	<b>YES</b>	Lower Pioneer Valley Educational Collaborative	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
21.	<b>YES</b>	McCann Technical School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	
22.	<b>YES</b>	McCann Technical School	Chp. 74 Metal Fabrication and Joining Technologies	Diploma		3 Years 50 % Schedule		High School Students	
23.	<b>YES</b>	Taconic High School	Chp. 74 Metal Fabrication and Joining Technologies	Diploma		3 Years 50 % Schedule		High School Students	
24.	<b>YES</b>	Taconic High School	Chp. 74 Advanced Manufacturing Technology	Diploma		3 Years 50 % Schedule		High School Students	



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<b>Workforce Programs – Unemployed/Underemployed CY 2021</b>						
<b>No. Verification</b>		<b>Educational Institution /Training Provider</b>	<b>Training Program</b>	<b>Projected Enrollment</b>	<b>Recruitmen t Method</b>	<b>Basic Competencies</b>
			<b>Hours</b>	<b>Projected Graduates</b>		
1.	YES	Westfield Technical Academy	CNC Operator	10	MH OSCC Traditional Social Media	OSHA/COVID Safety Protocols Basic Manufacturing Principles Introduction to Manufacturing Operations Basic Blueprint Reading Interpreting Process Travelers Quality Inspection Set-Up and Operation- CNC Lathe Set-Up and Operation- CNC Milling Machine
			165-200	9		
2.	YES	Greenfield Community College	Foundational Manufacturing	12	MH OSCC Traditional Social Media	OSHA/COVID Safety Protocols Basic Manufacturing Principles Introduction to Manufacturing Operations Basic Blueprint Reading Quality Inspection
			80	11		
3.	YES	Franklin County Technical School	CNC Operator	12	MH OSCC Traditional Social Media	OSHA/COVID Safety Protocols Basic Manufacturing Principles Introduction to Manufacturing Operations Basic Blueprint Reading Interpreting Process Travelers Quality Inspection Set-Up and Operation- CNC Lathe Set-Up and Operation- CNC Milling Machine
			160	10		
4.		Berkshire Community College	MACWIC Level 1	10	MH OSCC Traditional	OSHA/COVID Safety Protocols Basic Manufacturing Principles

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	YES		130 Hours	<b>8</b>	Social Media	Introduction to Manufacturing Operations Basic Blueprint Reading Interpreting Process Travelers 5.Quality Inspection/Metrology Set-Up and Operation- CNC Lathe Set-Up and Operation- CNC Milling Machine Set-Up and Operation- 3 D Printing MASTER CAD- CAM Laser Engraving Design and Operation
5.	YES	Charles McCann Technical School	Introduction to Advanced Mfg.	<b>10</b>	MH OSCC Traditional Social Media	OSHA/COVID Safety Protocols Basic Manufacturing Principles Introduction to Manufacturing Operations Basic Blueprint Reading Interpreting Process Travelers Quality Inspection Set-Up and Operation- CNC Lathe Set-Up and Operation- CNC Milling (Machine
			110 Hours	<b>9</b>		
6.	YES	Charles McCann Technical School	Welding	<b>10</b>	MH OSCC Traditional Social Media	OSHA/COVID Safety Protocols Shielded Metal Arc Welding (Stick Welding) Gas Metal Arc Welding (MIG Welding) Basic Blueprint Reading
			95 Hours	<b>9</b>		

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**Berkshire Innovation Center (BIC)**

<b>Name of Training</b>	<b>Hours</b>	<b>Description of Training/Skills</b>	<b>Targeted Population</b>	<b>Credential</b>	<b>Projected Enrollment</b>
Berkshire E-Talent Accelerator	60	Intensive experiential learning program for High School students/recently graduated Students choose and receive training and instruction in one of three technology areas: IT & Security, Advanced Manufacturing and Material Science, Electronics & Electrical Engineering or Software Programming	High School Seniors Juniors Or Recent Graduates	Certificate of Completion	40 Annually
Technology and the Future of Work with Edgi Learning	16	Berkshire Innovation Center worked with Edgi Learning to develop and launch Technology and the Future of Work remote course for Berkshire County high school students	High School (Grades 9-12)	Certificate of Completion from BIC/Edgi Learning	200 Annually
Transformative Technologies and Their Effects on Work and Society	N/A	OLLI at Berkshire Community College, in collaboration with the Berkshire Innovation Center, 1Berkshire, Williams College, the Massachusetts College of Liberal Arts, and Bard College at Simon's Rock, presented an eight week webinar series on new technologies and their effects on work and society in rural areas such as Berkshire County	Open	N/A	50-100

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**OBSERVATIONS**

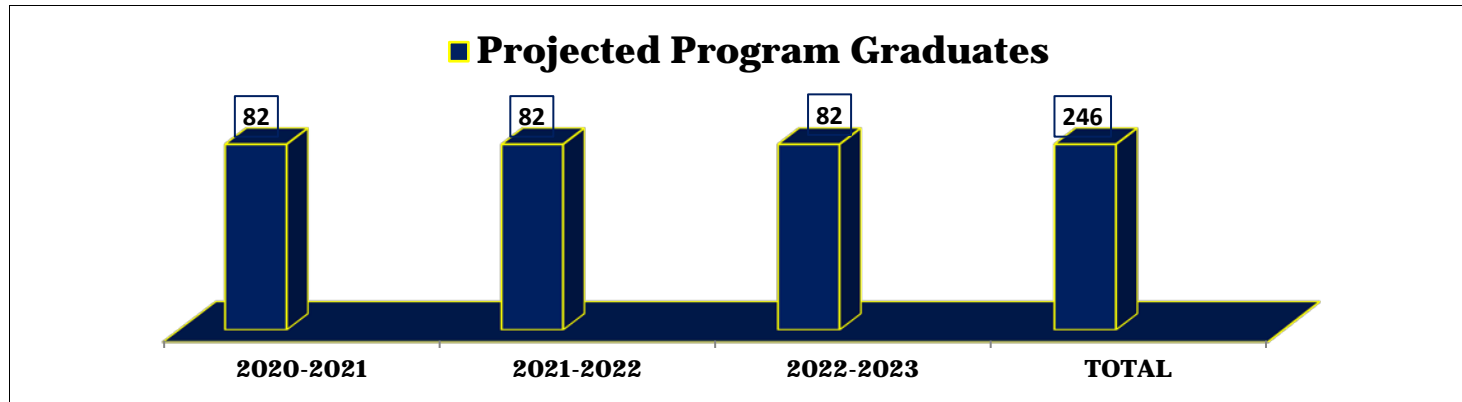
1. There are ten (10) MA Department of Elementary and Secondary Education Chapter 74 approved **Advanced Manufacturing Technology (AMT)** Programs for high school students being conducted in the West Region. The programs have the following general characteristics:

Category	Description
Curriculum	Approved : MA DESE Chapter 74 Framework <a href="https://www.doe.mass.edu/ccte/cvte/frameworks/advanced-manufacturing.pdf">https://www.doe.mass.edu/ccte/cvte/frameworks/advanced-manufacturing.pdf</a>
MassBridge Level	Levels 1 and 2
Schedule	School Year (36-38 weeks). 50% Technical-50% Academic
Grades	Grades 10-12- Full Year. Grade 9 - ½ Year- (Jan/Feb-June)
Enrollment Capacity	Usually 16 Per Grade- TOTAL: 64 (Grades 9-12) per School
Enrollment Retention	81%- Grade 9 → Grade 12 (Graduation)
Annual Graduates	<p style="text-align: right;"><b><u>Status at Graduation</u></b></p> <p>130 }  Employed in Advanced Manufacturing at Graduation: 82- (63%)  Employed-Other: 9 - (7%)  College (Full Time): 25- (20%)  Military: 5 - (3%)  Unknown: 9 - (7%)</p>
Credentials	High School Diploma <ul style="list-style-type: none"> <li>▪ Technical Certifications -Vary by School</li> <li>▪ Articulation Agreements- Vary by School</li> </ul>

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2. Framework **Curriculum** is consistent with competencies in MassBridge Levels 1 and 2. The majority of three year AMT program graduates are proficient at competency Level 2, in particular those graduates who had a Cooperative Education experience with a regional manufacturing company for some time period in Grade 12.
3. The **Chapter 74 Metal Fabrication and Joining Technologies Program**, although a separate Chapter 74 technical program, is an important part of the broader manufacturing industry in Berkshire County and is referenced in this Report in that context only. Student data from the Chapter 74 Metal Fabrication and Joining Technologies Programs being conducted at Charles McCann Technical School and Taconic High School are not included in the above referenced data metrics.
4. **Employability Skills**, often referenced by employers as a desired hiring and retention consideration, is covered in **Strand 4** within the AMT Framework, and all program graduates have been exposed to this portion of the curriculum.
5. **Enrollment Retention** in the AMT programs varies in a range from 78%-83%. Normally, students exiting the AMT program in Grades 11 and 12, for any reason, are not replaced at that grade level given the requirements to complete a full technical curriculum.
6. **Placement immediately following graduation** at an advanced manufacturing company ranges from 60%-68%. Using 63% as a fixed percentage, the West Region is projected to place 246 AMT program graduates at advanced manufacturing companies during the three years of MassBridge. This placement level will only slightly mitigate current Supply Gap Ratios as contained in the ***West Region Five-Year Manufacturing Plan 2019-2023***.

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7. There are four (4) **Community Colleges in the West Region** that offer Associate Degrees and/or One-Year credit bearing Certificate programs in Advanced Manufacturing Technologies and/or Engineering (Programs known by different names). The programs have the following general characteristics:

Category	Description
Degree Programs	Associate Degree: 6 Certificate Program: 5
Curriculum	Approved by MA Department of Higher Education (DHE) Programs/ Course Syllabi At Following Links: <a href="https://www.stcc.edu/explore/programs/">https://www.stcc.edu/explore/programs/</a> <a href="https://www.gcc.mass.edu/academics/">https://www.gcc.mass.edu/academics/</a> <a href="https://www.hcc.edu/courses-and-programs/areas-of-study/stem/engineering">https://www.hcc.edu/courses-and-programs/areas-of-study/stem/engineering</a> <a href="https://www.berkshirecc.edu/academics/programs-and-classes/engineering-and-engineering-techology/">https://www.berkshirecc.edu/academics/programs-and-classes/engineering-and-engineering-techology/</a>
MassBridge Level	Levels 1 and 2
Schedule	Two Semester Academic Year And Summer Session

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<b>Enrollment Capacity</b>	Varies by Program Classroom : 20 – Laboratory: 12-14
<b>Enrollment Retention</b>	N/A
<b>Annual Graduates</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">35</div> <div style="font-size: 3em; margin-right: 10px;">}</div> <div> <p>Springfield Technical Community College – 30</p> <p>Associate Degree- 22</p> <p>Certificate- 8</p> <p>Greenfield Community College -1</p> <p>Certificate- 1</p> <p>Berkshire Community College-4</p> <p>Associate Degree- 4</p> <p>Holyoke Community College</p> <p>Associate Degree- N/A</p> </div> </div>
<b>Credentials</b>	College Transcript Technical Certifications -Vary by School and Program

8. **Curriculum** is consistent with competencies in MassBridge Levels 1 and 2. The Associate Degree programs have technical competencies that are proficient at MassBridge competency Level 2, and may touch into MassBridge Level 3 competencies. Certificate programs heavy touch MassBridge Level 1. Depth of Level 2 touch is contingent upon courses/syllabi, and require further analysis by MassBridge partners.
9. Current Associate Degree course curriculum has a strong focus in pre-engineering content and processes which should support engineering related competencies needed by certain Massachusetts USA Institutes.

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10. Further development of **Work-Based Learning** opportunities, including paid internships at regional advanced manufacturing companies for students at both the Associate Degree and Certificate program levels, would strengthen practical applications of Level 2 competencies and expose students to Level 3 technical competencies.
11. **Enrollment Retention** varies by program and needs further analysis.
12. **Placement** data for community college students immediately following graduation is difficult to quantify, and not consistently available at either an institutional or department level. Anecdotal placement data would suggest that annual graduates transitioning immediately into employment at regional advanced manufacturing companies is only slightly mitigating current Supply Gap Ratios as contained in the **West Region Five-Year Manufacturing Plan 2019-2023**.
13. The three West Region MassHire Workforce Boards conduct **workforce training** programs in advanced manufacturing for unemployed/underemployed individuals and incumbent employees of regional manufacturing companies with funding primarily received on an annual basis by the MA Executive Office of Housing and Economic Development. The training is conducted using the vocational technical high schools and community colleges referenced in this report. The workforce training programs have the following general characteristics:

Category	Description
Curriculum	Developed By Individual Training Programs But Closely Aligned With Strand 2 Of Frameworks <a href="https://www.doe.mass.edu/ccte/cvte/frameworks/advanced-advanced-manufacturing.pdf">https://www.doe.mass.edu/ccte/cvte/frameworks/advanced-advanced-manufacturing .pdf</a>
MassBridge Level	Levels 1 and 2. Degree Of Level 2 Competency Attainment Contingent Upon Program
Schedule	80 Hours-235 Hours, Contingent Upon Program. Programs Conducted in Late PM
Cohort Served	Unemployed/Underemployed Individuals and Incumbent Employees of Regional Manufacturing Companies



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<b>Enrollment Capacity</b>	Usually 14 Per Cohort. See Chart 1 Below for FY 2021 Metrics
<b>Enrollment Retention</b>	88%
<b>Annual Graduates</b>	See Chart 1 Below for FY 2021 Metrics
<b>Credentials</b>	Locally Industry Recognized Certificate of Completion

**A. UNEMPLOYED/UNDEREMPLOYED**

<b>Category</b>	<b>Number</b>
<b>Participants Enrolled in Training Program</b>	<b>127</b>
<b>Participants Completing Training Program</b>	<b>111</b>
<b>Participants Completing Training Program and Employed</b>	<b>98</b>
<b>Participants NOT Completing Training Program and Employed</b>	<b>3</b>
<b>TOTAL NEW Pipeline Participants Employed</b>	<b>101</b>

**B. INCUMBENT:**

<b>Category</b>	<b>Number</b>
<b>Incumbent Employees Enrolled in Training Program Activity</b>	<b>65</b>
<b>Incumbent Employees Completing Training Program Activity and Retaining Employment</b>	<b>60</b>

*Chart 1- FY 2021*

14. **Curriculum** is consistent with competencies in MassBridge Levels 1 and 2. Depth of Level 2 competencies is contingent upon program length and sufficient allocation of program hours to hands-on- machining processes and techniques. Continued delivery of program curriculum in virtual space will impact consistency of Level 2 skills acquisition in preparation for transition to Level 3 competency attainment required by the MUSAI.

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15. **Placement** at regional advanced manufacturing companies of workforce program participants immediately following program completion is 85%-92%, and continues to be a strong source of entry level talent for regional companies at the computerized machine set-up/operator position level. This placement activity is incrementally mitigating current Supply Gap Ratios in selected priority occupations detailed in the **West Region Five-Year Manufacturing Plan 2019-2023**.
  
16. **Berkshire Innovation Center** (BIC), in collaboration with a group and regional partners, conducted a variety of technology- driven courses/ programming focused on innovation and experiential learning to support the development and growth of industry specific technologies in the Berkshires. Additional programming and scaling of best-in-show practices planned for 2021.

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**BERKSHIRE**  
WORKFORCE BOARD



**HAMPDEN COUNTY**  
WORKFORCE BOARD



**FRANKLIN HAMPSHIRE**  
WORKFORCE BOARD