# M-S AMC Bridge to Employment (BTE) Certificate Program

## Document Summary

***What it does***: This document justifies and documents a national standard model for a Bridge to Employment (BTE) certificate program meant to support the transition of unemployed or under-employed individuals in the field of manufacturing technology. It begins by describing the background and reasoning for such a program, describes recommended certificate program content, and provides examples of similar programs at two colleges, Spartanburg Community College, and Alamo Colleges.

***Who it's for***: College Administrators

***M-S AMC Present and Preferred State***:


- Collegiate strategy / Industry strategy
- Emphasis on (memory) recall
- Instructor dependent content
- Institution specific

- Strategic Industry/College Partnership
- Emphasis on information application
- Instructor independent content
- Common National Standard

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## Bridge to Employment Narrative Proposal

All across the United States of America regions having concentrated areas of manufacturing are experiencing a lack of entry-level candidates for possible employment, who have the necessary knowledge and skills needed to perform successfully on the job. In the past decade most industries, in order to maintain their competitive edge, have had to reduce support functions, including in many cases, unfortunately, the reduction of employee education and training needed to perform a job successfully. As a reality, this trend forces organizations with limited training budgets to take a long-term approach to bring employees to a state of readiness needed to meet the ever-changing drive to increase production rates while reducing product costs to maintain a viable position in the global market. Another exacerbating condition is the increase in the levels of automated processes required to create the desired capacity needed for a competitive edge. In many instances, companies are going into overdrive placing nearly Herculean tasks on the current workforce that strains them to a tiring pace just to keep even with changes in processes and their successful deployment. In addition, an aging workforce is retiring and taking their experience and abilities with them, leaving many employers with a knowledge and skills gap in the current workforce, which is crippling at the least, and devastating at the extremes, while limiting an organization's ability to respond to the rapid product and production changes. In many instances, companies have reached out to local, state, and federal entities for help in developing a workforce that has the knowledge, skills, and abilities to keep the industry viable. Wide varieties of organizations have started initiatives to create regional talent development networks and develop a sustainable workforce that will increase the available number of highly skilled technicians for manufacturing and related industries.

As an example of local efforts, in 2011, the San Antonio Manufacturers Association's (SAMA) assessment of area manufacturers identified the need to grow the local skilled workforce capacity as an urgent priority. Workforce Solutions Alamo (WSA), a career development center, and Alamo

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Colleges (AC), a San Antonio, TX community college system with 5 sites, identified and targeted high-demand occupations on their training list, which resulted in WSA and AC to meet with SAMA. The alliance members agreed the need for machinists and skilled assembly and production operations technicians was paramount. Alamo Colleges identified a set of successful practices for accelerating training in these occupations and ensuring participant completion of the required education and training. In addition, Kentucky's Bluegrass Community College, located in the Toyota automobile manufacturing facility, developed an "Earn and Learn" program to educate and train a maintenance workforce capable of performing multi-craft job tasks required in a highly automated work environment. This program model provides a set number of weeks of training interspersed with an equal number of weeks of on-the-job training (OJT) with a mentor to help reinforce the learning through practical application. Furthermore, in the state of Tennessee, the Nissan manufacturing organizations located at Murfreesboro in the middle of the state have collaborated with the local TN College of Applied Technology (TCAT) to offer an apprenticeship style program similar to that offered by the Toyota-Bluegrass CC partnership. The partners deem these efforts successful. Part of the success of these programs was a pre-screening process that included preparatory work such as those delivered by Alamo Colleges.

State government entities have recognized many of these local level initiatives and have spurred legislative action to develop statewide ventures to spark the development of similar programs. For example the state of South Carolina, has commissioned the "South Carolina Manufacturing Certified" program. Spartanburg CC graduated its first class of 10 recently and plans to deploy the bridge-to-employment program at its other four locations. The state of Michigan, is piloting the MAT2 program at Oakland CC and Henry Ford CC in Dearborn, MI. Initial reports indicate that students in these two curricula are faring well. Students in these two programs are also receiving course work in the same preparatory areas as those named earlier in this proposal. All of these activities and

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initiatives have gained national attention and awareness of the need to develop a concerted national effort to formalize a universal model to develop and deploy accelerated education and training programs to fulfill the identified needs of American-based industries.

At the national level, the Department of Labor (DOL) has been funding multiple efforts to foster development of successful programs to accelerate the learning process while supporting a shift to mastery of competencies needed for success on the job for new employees. The Multi-State Advanced Manufacturing Consortium represents a group of 13 community colleges convened to develop a universal model that will identify the competencies needed for success in industry. In addition, the consortium will recommend methods for deployment of educational opportunities that include a developed knowledge base and skill set attainment that meets industry's needs along with the attainment of nationally recognized credentials. Methods will include blended learning formats that will provide diverse and robust student-centered learning strategies. An integrated systems approach will foster learning by developing critical thinking skills, proven problem solving skills, and decision-making skills needed for quickly responding to manufacturing needs and production issues. .Other key elements involve identifying success skills and knowledge that prepare transitioning students for jobs and careers in the modern manufacturing environment. Furthermore, the consortium will recommend administrative support systems that will ensure the on-going professional development of educational practitioners to remain on the leading edge of technologies and their associated education and training support. Paramount to the success of this undertaking will be the nearly immediate preparation of candidates for the modern and ever-changing work environment. With the driving commitment for community colleges to become the nexus for this transformation, the following recommendations and examples will serve as a basis for workforce solutions that are industry responsive and validated by attainment of nationally recognized credentials.

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In many instances, varied groups of potential workers are available for work, yet they may not meet the entry-level criteria set by most companies. Identified groups include

- high school graduates not planning on a university education
- GED recipients that have no developed knowledge or marketable skills
- older workers displaced due to changes in the economy
- under-employed workers that have taken work not requiring their previous skill sets
- veterans that may or may not possess knowledge and skills needed to transition back into civilian life and its challenges.

In addition, demographics for most of the sampled populations mentioned previously include

- Ages ranging from 18 to 70 years of age with the majority between the ages of 23 and 50
- GED and High school diplomas are the base level of education for the majority
- A high percentage of veterans, for Alamo approximately 33%
- Women represented from 11 to 25% of the sample across five cohorts (88 persons)
- Ethnicity varied with a distribution closely matching demographics of the local populations
- 66% were not employed in their previous field and had no industrial production experience

These populations are at risk of not reaching their full potential. Short-term bridge programs can offer an opportunity for these identified groups to enter industry successfully with the necessary skills, knowledge, and abilities to perform well, meeting the challenges presented to them in a production environment. Other factors may present barriers to success and will require additional support to students to help increase their rates of success. These factors include medical reasons, family-related issues, the need to return to work and a paycheck for family support, and some could not learn math at the required level. In addition, others could not pass background checks or drug tests. However, among the cohorts sampled retention rates varied from 71 to 89% with an average of nearly 81%

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retention. Indeed, these rates speak to the success of these preparatory programs. While no one program of study exists that will guarantee 100% success, many programs share common characteristics that make them successful within their regions. Common characteristics include

- Cohort based delivery with class sizes between 12 and 24
- Self paced learning where possible, along with directed instruction for remediation
- Blended delivery methods with a combination of online, face-to-face, and directed teams
- Hands-on skill set development labs with practice and demonstrations of mastery
- Emphasis on systems level critical analysis and thinking
- Use of standardized curricula leading to stackable, nationally recognized credentials
- An associated apprenticeship or cooperative/internship component
- Professional support for resume writing and mock interview workshops
- Interaction with success/completion coaches and mentors
- Support for remediation and non-classroom support systems (e.g. day care, transportation)
- Job interviews with potential employers, trending toward cooperative learn & earn programs

While this list of characteristics may not meet the specific needs of any one particular industry, it serves as a basis for the development of a workforce readiness program that greatly increases a work candidate's chances for immediate employment . The learners' attainment of nationally recognized credentials embeds a third party validation of programs into the learning cycle. Table 1 shows examples of the stackable credentials students are expected to attain. Competencies for each credential are contained within the standards for successful completion of the course materials. Accelerated learning methods will help fill the ranks of skilled workers available for employment in a more timely manner than traditional approaches. Providers of education and training may combine this development of basic employability skills with more traditional methods, such as apprenticeship

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programs. Fiscal support from state workforce development groups such as Workforce Investment Area boards and Career Development Centers are key to successfully funding and supporting these Bridge-to-Employment efforts.

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## Table 1: Stackable Credentials Offered by Alamo Colleges & Spartanburg CC

| Alamo CC Production Tech Certifications | Alamo CC Machinist Certifications | South Carolina Manufacturing Certification |
|---|---|---|
| MSSC Safety | MSSC Safety | MSSC Safety |
| MSSC Quality & Measurement | MSSC Quality & Measurement | MSSC Quality & Measurement |
| MSSC Manufacturing & Production | MSSC Manufacturing Processes & Production | MSSC Manufacturing Processes & Production |
| MSSC Maintenance Awareness | MSSC Maintenance Awareness | MSSC Maintenance Awareness |
| NCRC (Work Keys) | NCRC (Work Keys) | NCRC (Work Keys) |
| **Regional Program-specific Certificates** | | |
| | NIMS Level 1 Certification | Six Sigma Yellow Belt |
| **Recommended Addition** | | |
| NCRC Plus | NCRC Plus | NCRC Plus |

The following Appendices shows examples of programs offered by Alamo Colleges and by Spartanburg Community College. Both show differing approaches based on the previously listed characteristics for a successful Bridge-to-Employment Program, each adapted to the regional needs of industries in their respective service areas.

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## Appendix A: Certified Production Technician (Alamo CC)

**90 Day Training (720-contact hours/18 weeks nominal)**
**Blended Learning Program (online/classroom/lab)**

**Track 1: Certified Production Technician**

- MSSC Certifications that Production Technician Can Earn:
  - MSSC Safety (minimum requirement)
    - Online Learning Component (OLC)
    - 8 hours of Safety Training (Classroom/Lab)
  - MSSC Quality and Measurement (minimum requirement)
    - 21 hours of Math
    - 40 hours of Quality Concepts (lab) including
      - blueprint reading
      - measurement tools
      - quality control
  - MSSC Manufacturing Processes and Production
    - 8 hours (lab)
  - MSSC Maintenance Awareness
    - 40 hours (lab)
- National Career Readiness Certification
  - Reading
  - Applied Math
  - Locating Information
- NCRC Plus Ranking/Certification

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- Work Discipline: Productivity and dependability
- Teamwork: Tolerance, communication, and attitude
- Customer Service Orientation: Interpersonal skills and perseverance
- Managerial Potential: Persuasion, enthusiasm, and problem solving

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## Appendix B: Entry Level Machinist (Alamo CC)

**Track 2: Entry Level Machinist**

- MSSC Certifications that Production Technician Can Earn:
  - MSSC Safety (minimum requirement)
    - Online Learning Component (OLC)
    - 8 hours of Safety Training (Classroom/Lab)
  - MSSC Quality and Measurement (minimum requirement)
    - 21 hours of Math
    - 40 hours of Quality Concepts (lab) including
      - blueprint reading
      - measurement tools
      - quality control
  - MSSC Manufacturing Processes and Production
    - 8 hours (lab)
  - MSSC Maintenance Awareness
    - 40 hours (lab)
- NIMS Level 1 Certification
  - Safety Awareness
  - Measurement
  - Job Planning, Benchwork & Layout
  - Drill Press
  - Machine Shop with Hands on Training (160 hours)
- National Career Readiness Certification
  - Reading

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- Applied Math
- Locating Information

- NCRC Plus Ranking/Certification
  - Work Discipline: Productivity and dependability
  - Teamwork: Tolerance, communication, and attitude
  - Customer Service Orientation: Interpersonal skills and perseverance
  - Managerial Potential: Persuasion, enthusiasm, and problem solving

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## Appendix C: Certified Production Technician (Spartanburg CC)

**South Carolina Manufacturing Certification Program**
**30 Day Training (240-contact hours/6 weeks nominal)**
**Blended Learning Program (online/classroom/lab)**

**Track 1: Certified Production Technician**

| Week | | Time | Set-up time | Topic<br>Preamble: @ 24-30 hours<br>Total: 29 Work days/260 contact hours/ 7 weeks |
|---|---|---|---|---|
| **Week 1** | | | | |
| | M | 2pm | | SCMC Information Session |
| | T | 10am | | SCMC Information Session |
| | W | TBD | | KeyTrain |
| | TH | TBD | | KeyTrain |
| | M | 12:30-4 | 11:30 - 4:30 | WorkKeys Assessments |
| | T | 12:30-4 | 11:30 - 4:30 | WorkKeys Assessments |
| | TH | 9 - 2:30 | 8-1 | WorkKeys Retest |
| | M-F | | | Background Checks/Drug Screens |
| | M | 9-12 | | Career Development |
| **Week 2** | | | | **Contact hours: 40** |
| | M | 8-12 | | Safety |
| | M | 1-5 | | Quality |

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| | | | | |
|---|---|---|---|---|
| | TH | 8-12 | | Safety |
| | T | 1-5 | | Quality |
| | W | 8-12 | | Safety |
| | W | 1-5 | | Quality |
| | TH | 8-12 | | Safety |
| | TH | 1-5 | | Quality |
| | F | 8-12 | | Safety |
| | F | 1-5 | | Quality |
| **Week 3** | | | | **Contact hours: 40** |
| | M | 8-12<br>1-5 | | **Holiday** |
| | T | 8-12 | | Safety |
| | T | 1-5 | | Quality |
| | W | 8-12 | | Safety |
| | W | 1-5 | | Quality |
| | TH | 8-12 | | Safety |
| | TH | 1-5 | | Quality |
| | F | 8-12 | | Safety |
| | F | 1-5 | | Quality |
| **Week 4** | | | | **Contact hours: 40** |
| | M | 8-12 | | Safety |

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| | | | | |
|---|---|---|---|---|
| | M | 1-5 | | Quality |
| | T | 8-10 | | MSSC Safety Review |
| | T | 10-12 | 9:30-12 | MSSC Safety Assessment |
| | T | 1-5 | | Quality |
| | W | 8-5 | | Quality-includes MSSC test review |
| | TH | 8:30-10:30 | 8-10:30 | MSSC Quality Assessment |
| | TH | 10-5 | | Six Sigma Yellow Belt |
| **Week 5** | | | | **Contact hours: 40** |
| | M | 8-5 | | Six Sigma Yellow Belt |
| | T | 8-12 | | Manufacturing/Production |
| | T | 1-5 | | Maintenance |
| | W | 8-12 | | Manufacturing/Production |
| | W | 1-5 | | Maintenance |
| | TH | 8-12 | | Manufacturing/Production |
| | TH | 1-5 | | Maintenance |
| | F | 8-12 | | Manufacturing/Production |
| | F | 1-5 | | Maintenance |
| **Week 6** | | | | **Contact hours: 40** |
| | M | 8-12 | | Manufacturing/Production |
| | M | 1-5 | | Maintenance |
| | T | 8-12 | | Manufacturing/Production |

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| | | | | |
|---|---|---|---|---|
| | T | 1-5 | | Maintenance |
| | W | 8-12 | | Manufacturing/Production |
| | W | 1-5 | | Maintenance |
| | TH | 8-12 | | Manufacturing/Production |
| | TH | 1-5 | | Maintenance |
| | F | 8-12 | | Manufacturing/Production |
| | F | 1-5 | | Maintenance Review |
| **Week 7** | | | | **Contact hours: 36** |
| | M | 8am-12 | | Manufacturing/Production |
| | M | 1-5 | | Maintenance Review |
| | T | 8-10 | | MSSC Manufacturing/Production Review |
| | T | 10-12 | 9:30-12 | MSSC Manufacturing/Production Test |
| | T | 1-3 | | Maintenance Review |
| | T | 3-5 | 2:30-5 | Maintenance Test |
| | W | 9-12 | | Career Development |
| | TH | 8-12 | | Interviews/Employers |
| | TH | 12-1 | | Graduation Lunch & Certificates |

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