

Upper Cumberland Human Resource Agency LWIA 7

2014 Labor and Education Alignment Program (LEAP)

Advanced Manufacturing/Industrial Maintenance/Mechatronics
in the Upper Cumberland

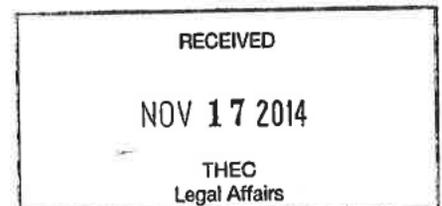
Upper Cumberland Human Resource Agency LWIA 7

IN PARTNERSHIP WITH

Tennessee College of Applied Technology – Livingston

Overton County School System
Putnam County School System
White County School System

Automation Tool
Bennett Industries
Cummins Filtration
Custom Tool, Inc.
Tutco



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Funding Requested:

\$1,000,000.00



Director of TCAT Livingston



Project Director

PROJECT SUMMARY

The Upper Cumberland LEAP grant will build on a strong collaborative of employers, community leaders and educators to deliver Advanced Manufacturing/Industrial Maintenance/Mechatronics training to the secondary schools in three counties—Overton, Putnam and White. The Tennessee College of Applied Technology – Livingston (TCAT Livingston) will provide the training through dual enrollment classes in the Manufacturing Cluster-Mechatronics Program of Study approved by the TN Department of Education Career and Technical Department. Training in this cluster addresses the current needs of many employers in the Upper Cumberland and specifically addresses needs of our partnering employers. The training will articulate into the TCAT Livingston’s Industrial Maintenance program—Mechatronics and/or Industrial Maintenance Technician diplomas and will encourage students to pursue post-secondary training and credentials. The training provided will align the outcomes of this grant to the objectives of the Drive to 55 and the LEAP program in Tennessee.

The dual enrollment classes funded through this grant will strengthen the workforce by connecting high school students with education and employment opportunities that will prepare them to meet the skill demands of employers. High schools and TCATs are challenged to provide appropriate training and the expensive, state-of-the-art equipment needed for the training in advanced manufacturing. The equipment purchased with grant funds will allow the TCAT Livingston to provide dual enrollment training on equipment that incorporates programmable logic controls, digital electronics, hydraulics, pneumatics, robotics, and automation to high school students in the three partnering counties. The grant will provide each high school with the Certified Production Technician on-line curriculum. Upon completion of the four modules, a student could take the certification exam offered by the Manufacturing Skills Standard Council and receive an industry recognized certification that demonstrates mastery of core competencies of manufacturing production at entry-level through front-line supervisor.

Employers will provide input and actively participate in curriculum development, work-based activities, and advisory committees. The partnership will support and coordinate with the Upper Cumberland Pathways to Prosperity and the Highlands Workforce Development and Education programs. Each partner is committed to the ensuring the Drive to 55 mission of increasing the number of post-secondary credentials obtained by Tennesseans is the driving force behind this grant.

Section 1: Program Need

The Tennessee Statewide Supply and Demand Analysis for the 16 Educational Clusters by the Tennessee Department of Labor and Workforce Development, Employment Security Division, Labor Market Information Section dated November 2012, predicts significant shortages of skilled workers in the following areas: precision production encompassing nearly 40 occupations, and production operations and maintenance employment opportunities through 2018. The report indicates that there are very few training programs in Tennessee available for these career fields. The skill gaps were identified by using the Department of Labor's state industry-occupation matrix. Production operation and maintenance is expected to have 1,298 more annual openings than the number of individuals completing training related to the cluster and Precision Production Pathways is expected to have 1,770. These two clusters include occupational titles such as Team Assemblers, Machinists, Computer-Controlled Machine Tool Operators, Extruding Machine Setters, Maintenance and Repair Workers, Industrial Machinery Mechanics, Maintenance Workers, Electromechanical Equipment Assemblers, and Electrical and Electronic Equipment Assemblers.

The Upper Cumberland Regional Strategic Plan for the Tennessee Department of Economic and Community Development states that "workforce development has been identified in virtually every planning effort across the region as a major concern." "Upper Cumberland businesses consistently express a need for stronger focus on the STEM disciplines, skilled trades and technical training." "The Upper Cumberland region is home to a workforce of more than 153,000 that are employed by 6,000 entities, including 471 companies in the manufacturing sector. Manufacturing is the largest employment sector." "Business and community leaders are calling for a more qualified work pool with a focus on soft skills and general work ethics. Graduates at all levels are preparing for saturated job markets, while technical and occupational positions remain unfilled." This grant will specifically address

the needs as stated in the ECD Regional Strategic Plan by providing the Upper Cumberland with a workforce equipped with the technical skills needed by employers in the manufacturing sector.

According to the MTIDA 2014 Community Data Profiles, the annual average employment in the Manufacturing area for (2012) for Putnam County was 4,561; Overton County, 868; and White County, 1,728 respectively. Manufacturing is the region's largest employment sector and the Highlands (Jackson, Overton, Putnam, and White counties) is home to more than 200 manufacturing companies. The manufacturing businesses that are partnering with the Upper Cumberland LEAP grant have confirmed their own difficulties in finding the skilled workers needed now and in the future. (See letters of partnership and support)

Opportunities for workers and demand for industrial maintenance/mechatronics skills will continue to increase in the Upper Cumberland as new industries locate in the Upper Cumberland region. Recent announcements of new industries in our area such as Academy Sports and Bridgestone Tire continue to demonstrate the ongoing need for these skillsets in middle Tennessee. In addition, TTI Floors announced the expansion of their operation with 500 jobs in the next year.

TCAT – Livingston proposes to address these needs now and into the future by creating a seamless pathway from K12 to post-secondary programs through dual enrollment classes in Manufacturing. TCAT – Livingston started a welding program at White County High School in the fall of 2014 and will expand the Industrial Maintenance program through this grant by adding the Mechatronics component. The grant also proposes to create a new Industrial Maintenance-Mechatronics program at Cookeville High School in Putnam County. The Industrial Maintenance—Mechatronics program at TCAT Livingston will be enhanced by upgrading the mechatronics lab with funds from the grant.

By improving the educational pathway between secondary and post-secondary institutions, the attainment of post-secondary certificates and diplomas will have a profound impact on meeting goals

for the Governor's Drive to 55 initiative by attracting a new pool of students that would begin working toward a post-secondary credential through dual-enrollment. In collaboration with industry leaders and employers, the awarding of this grant would have a major impact on the availability of skilled workers now and into the future.

The Upper Cumberland region was selected to participate in Tennessee's Pathways to Prosperity Network. The Pathways to Prosperity national network is two years old, with eleven states members—with Tennessee being one—doing significant work in creating career pathways in grades 9 – 14. The overall goal of the Pathways Network is to increase the number of young people who complete high school, attain a postsecondary credential with value in the labor market, and get launched on a career in a high-demand, high-wage occupation that can also provide the basis to pursue further education and career advancement. A labor study conducted by Wadley Donovan LLC in 2009 provided the first independent validation of skill shortages in the region. Site visits to industry provide the most current rationale for selection of a Pre-Engineering/Advanced Manufacturing Pathway in the Upper Cumberland. The Highlands conducted a labor needs assessment survey in 2012 and met with the Department of Labor and Workforce Development to obtain additional information regarding labor shortages in the region. The past two years the Upper Cumberland Pathways to Prosperity has significantly impacted the awareness and identification of the skills needed in the Advanced Manufacturing pathways. This grant would provide the seamless pathway needed for students in high school to pursue post-secondary training in Industrial Maintenance—Mechatronics. The seamless pathway in Advanced Manufacturing provided by this grant will align with the goals of the Governor's Drive to 55 and the Pathways to Prosperity work in the state of Tennessee.

Section 2: Program Plan

The Upper Cumberland LEAP grant will provide equipment for dual enrollment classes in Manufacturing at three local high schools. The implementation of the grant will begin in January 2015 with the hiring of a full-time Industrial Maintenance—Mechatronics instructor at the TCAT Livingston. The instructor will begin the development of the curriculum to be utilized in the full-time program at TCAT Livingston. The four classes to be taught at the secondary level will be mapped to the curriculum being utilized at the TCAT to ensure a “seamless” pathway from the high school program to the TCAT Industrial Maintenance program. The objective of the grant will be to provide training that meets the needs of the employers in the Upper Cumberland. Input from employers will be a vital part of the curriculum development and will be obtained from our partnering employers throughout the process. This objective will be measured by the successful placement of graduates into careers in the Upper Cumberland. Follow-up and placement of graduates is an integral part of the Student Services department. TCAT Livingston will report each year the completion and placement rate of both secondary and post-secondary students.

Equipment purchased with grant funds will be ordered in the spring of 2015. Labs will be set-up in early summer and ready for classes to begin in August of 2015. Part-time instructors for Putnam County and White County will be hired in July 2015. Training on the equipment will take place in July for the full-time instructor and the part-time instructors.

The first dual enrollment classes offered will be Principles of Manufacturing and Digital Electronics. Both classes provide the foundational knowledge and skills needed for the Mechatronics I and II classes to be offered. In January of 2016, the Mechatronics I class will be added to the program. Mechatronics II will be offered in the August of 2016. Implementing classes in this sequence will allow the high schools to build their programs and to ensure a strong enrollment for each class. With the grant objective of building a seamless pathway in Manufacturing, the TCAT at Livingston along with our

partnering high schools will measure and track the enrollment numbers and completion rates of each class each semester.

Instructors of the Industrial Maintenance—Mechatronics program will be required to establish an advisory committee that will serve as the steering committee for this grant. The committee will be comprised of a representative from Upper Cumberland Human Resource Agency, the Highlands Workforce Development and Education committee, and the four partnering employers. Additional employers will be added to ensure the goal of having a program driven by employer needs is met. The advisory committee will meet each trimester and will review all curriculum and equipment purchased. The committee will also review all enrollment numbers, completion rates, and placement rates of the program and make recommendations for any improvements.

The grant will provide the TCAT Livingston will the necessary funds to equip dual enrollment labs offsite that would not be possible without the funding of this project. The equipment purchased with grant funds is described in the Appendix A: Budget. In order for students to have the highest quality of training and a seamless transition from high school to post-secondary training, a hands-on approach to development of the competencies is required. For students to be able to gain the skills needed by employers, equipment trainers simulating the equipment being used in industry will be purchased. A detailed description of the linkage of equipment to the skillset needed by employers is included in Appendix A.

Section 3: Strength of Partnership

The Upper Cumberland LEAP grant collaboration consists of the following partners: Upper Cumberland Human Resource Agency LWIA 7, The Highlands Economic Partnership's Pathways to Prosperity, Tennessee College of Applied Technology – Livingston, Overton County School System, Putnam County School System, White County School System, Automation Tool Company, Bennett Industries, Custom Tool, Cummins Filtration, and Tutco. The grant is also supported by the S & S

Precision of Sparta, Putnam County Chamber of Commerce, Putnam County, Livingston and Overton County Chamber of Commerce, Overton County, the Local Workforce Investment Board Area 7, Dr. Robert Bell, TTU President Emeritus and Chair of the Highlands Workforce Development and Education Committee, and Dr. Doug Young, Coordinator of Inter-disciplinary Studies at TTU.

The Upper Cumberland Human Resource Agency (UCHRA) will serve as the “lead entity” for the grant. UCHRA has been charged with the administration of numerous state and federal grants over the past 20 years. They will be responsible for coordinating all grant activities, organizing partnership meetings and participation from each partner and for spearheading all efforts.

The Highlands Economic Partnership’s Pathways to Prosperity will serve in partnership role and will work to coordinate activities that provide career awareness, promote the pursuing of careers and assist students in grades 7 through 12 in making career decision related to the Advanced Manufacturing Pathways. The Advanced Manufacturing subcommittee will continue to establish articulation agreements that will provide “seamless pathways” from high school to post-secondary training—leading to industry credentialing and post-secondary credentials.

The Tennessee College of Applied Technology – Livingston (TCAT Livingston) will serve as the fiscal agent for the grant. TCAT Livingston will also develop, implement, and teach the dual enrollment classes in Manufacturing in the Overton, Putnam and White Counties. For over forty years, the TCAT Livingston has been the premier provider for workforce development in the Upper Cumberland. This grant will further enhance and expand the training being offered by the College.

Overton, Putnam, and White County Schools will partner with the TCAT Livingston and the Highlands Pathways to Prosperity to encourage and promote the enrollment of students into the field of Advanced Manufacturing. Putnam and White County Schools will provide classroom and lab space for the Manufacturing—Mechatronics programs. The CTE Directors in all three school systems will work with the TCAT Livingston and the high schools to ensure the enrollment and completion of students in

this program. The Director of Schools in all three systems support and encourage the development of their Career and Technical Programs.

The involvement of our partnering employers is a key component to the success of this grant. The employers who have committed to partnering with the grant are also committed to participating in the grant activities. Activities include but are not limited to the developing and reviewing of curriculum, participation in advisory committees, working with instructors to ensure the needed skillsets are being taught, and working to provide work-based learning opportunities, co-ops, and internships for students. Each of the employers has been a strong partner in the work that has already taken place in the Upper Cumberland toward establishing and promoting a career pathway in Advanced Manufacturing. The partnering employers currently serve in various roles including serving on the Highlands Workforce Development and Education Committee, the Advanced Manufacturing Subcommittee and the TCAT Advisory committees.

In addition to the partners, the local Chambers of Commerce, the local county governments, community leaders, CTE Directors, and other employers have pledged their support to the Upper Cumberland LEAP grant. The employers and leaders in the Upper Cumberland recognize the importance of having a trained workforce in our region and support the collaboration of projects that ensure the needs employers and future employers of the region are being met.

Section 4: Budget Plan

The objective of this grant request is to provide a seamless pathway of training that focuses on the needs of manufacturing employers in the Upper Cumberland region. At this time, training in the career cluster is currently being provided at the post-secondary level. The Upper Cumberland partners propose to implement and enhance training in Industrial Maintenance—Mechatronics by adding dual enrollment classes offered by the TCAT Livingston into the secondary career and technical class offerings at Putnam County and White County. In order for these classes to be implemented funds must be

secured to equip the labs for the programs. In addition, the funds requested will expand the current lab at the TCAT Livingston by adding Mechatronics as a diploma area and offer this program of study to students from Overton County who attend the TCAT as dual enrollment students. By establishing these programs of study at the secondary level, high school students upon graduation will be able to articulate the training into the post-secondary program at the TCAT Livingston. The articulation provides a seamless transition and has the potential to increase the number of students attending a post-secondary institution and receiving a credential. The objective is directly aligned to the Drive to 55 goal of increasing the number of post-secondary credentials award to Tennesseans by 2025.

The grant will fund equipment for three labs. Each lab will consist of trainers that simulate the equipment used in the manufacturing environment in the Upper Cumberland. Students will receive training in Electrical, Electrical Controls, Fluid Power, Mechanical, Rotating Machines, Motor Controls, PLCs, and Robotics. The capstone of the training will be a Mechatronics trainer with a Fanuc robot. The trainers provide hands-on training with an extensive curriculum spanning from the basics of manufacturing through advanced manufacturing industry skills. The comprehensive training allows for individual self-paced or group learning flexibility. Key industry skills such as problem solving, troubleshooting, operation, tuning and adjustment, installation, and maintenance & repair are integrated throughout the training activities. Hands-on exercises performed on the trainers are presented as job tasks for learning the skills needed on the job. A detailed list of trainers being funded by this grant is in Appendix A: Budget.

The grant will also fund the purchase of the Manufacturing Skill Standards Council's Certified Production Technician multi-media training materials. The program consists of four modules: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; and Maintenance Awareness. The Certified Production Technician instruction will be embedded into the four dual enrollment classes offered by the TCAT Livingston. Students will be eligible to sit for the CPT

Certification industry-based certification exam upon completion of the four dual enrollment classes. This certification validates the student's mastery of the four critical production skill standards common to all sectors of manufacturing.

As part of the grant activities, each instructor will attend training in the summer on the trainers being purchased by the grant. Instructors will also visit with employers in the Upper Cumberland to determine the skillsets and the equipment being used and the needs of the employers. Partner employers will review the curriculum and make recommendations regarding necessary revisions to master the skills needed for employment.

The local match required by the grant will be funded by the TCAT Livingston. TCAT Livingston will fund the cost of salaries and benefits of instructors, travel, and supplies for the program. Putnam County and White County schools will provide classroom and lab space for the programs. The TCAT Livingston will also fund the remaining dollars needed to purchase the equipment for the labs. In addition, counselors from TCAT Livingston, high school counselors and Academic Career Coaches from the Highlands Pathways to Prosperity will be actively involved in the grant activities and will play an important role in the career awareness and enrollment of students into this program and the dual enrollment classes.

Section 5: Sustainability

The Tennessee College of Applied Technology – Livingston has been in existence since 1966 and continues to maintain strong enrollments, completion, and placements of students. The mission of the College is to be the premier supplier of workforce development in the Upper Cumberland. The demand for the Industrial Maintenance program continues to grow as evidenced by the enrollment numbers in the program. The program has maintained an average 77% completion rate and an 86% placement rate for the past five years. The addition of the Mechatronics diploma will only strengthen the overall program placement. Dual enrollment has been a major part of the training at the TCAT Livingston since

the early 1980's with the passage of the Comprehensive Education Act. TCAT Livingston trains on average between 100 and 150 high school student from Livingston Academy each year. During the most recent years, TCAT Livingston has expanded its dual enrollment classes to Clay, Jackson, and White Counties. This grant will also expand the White County dual enrollment program and create a new dual enrollment program in Putnam County. Each of these counties maintains a successful Career and Technical department and the addition of a new program of study will provide students with the opportunity to pursue new career paths. Given the rich history of the TCAT Livingston and the successful implementation of Career and Technical Programs at the secondary level, the sustainability of these new programs of study is expected to be long-term. The TCAT Livingston is committed to maintaining the program as long as the need exist. The implementation of programs such as the TN Lottery, TN Promise and TN Reconnect will continue to support and encourage students to enroll in high-demand occupations and careers and to pursue post-secondary education at the Tennessee Colleges of Applied Technology.

Each of the employer partners have well established businesses in the Upper Cumberland and continue to grow and thrive in an ever changing economy. Each partner has shown through their involvement in the region their commitment to building a strong workforce that supports the needs of existing business and future business that locate in the Upper Cumberland region. Each employer has committed to the ensuring the success of the grant as indicated in their partner letters of support. Employers will continue to serve on the Occupational Advisory Committee for the Industrial Maintenance program after the grant period and will continue to contribute to the overall success of the training provided at the TCAT Livingston.

Communication with each of the partners will continue after the grant period through the TCAT's general advisory committee and through outreach of the TCAT staff. Instructors and staff at the TCAT Livingston maintain constant contact with the community leaders and employers in our region.