

## **Department of Industrial Technology**

### **2022 Assessment Report**

#### **MISSION STATEMENT**

The Mission of the Department of Industrial Technology is to provide the local and regional workforce credentialed, skilled, and competent entry-level technicians and skilled-trades professionals, and to be responsive to emerging workforce needs. The Department encourages the development of teamwork and interpersonal communication skills required in the workplace. The Department also stresses the importance of a strong work ethic and the value of continuing education and lifelong learning.

#### **DEPARTMENT ALIGNMENT WITH PRIORITIES FOR ACTION**

##### **1. Place Student Success at the Center of All We Do**

The Department of Industrial Technology has maintained a completion rate and retention rate for most all of its' programs at a level well above average, owing much of it to a student centered, faculty driven advisor model, dedicated Department Program Coordinator providing services for all Department students, and high touch teaching model that provides significant guidance, classroom support, and mentorship.

##### **2. Drive Excellence and Innovation in Teaching, Learning, and Research**

The programs within the Department provide a high level of technical training and hands-on learning opportunities for students in high demand, high wage careers. Significant examples that are cited throughout the individual program reports highlight the continued effort to enhance and renew course offerings to align with labor market data and Industry Advisory Board recommendations, and to ensure that the curriculum is relevant and responsive to the needs of employers.

##### **3. Mission First, People Always**

The Department Industry technology strives to recruit and retain faculty with the highest level of Industry experience, credentials, and teaching excellence. Faculty are supported in efforts to maintain all Industry certifications, participate in professional development and education on all relevant current and emerging technologies, and all efforts to improve the quality of their program and the overall student experience.

## 4. Partner with Place

Many programs within the Department rely on significant connections to Local and Regional Industry Partners. Providing relevant and robust workforce training and education requires regular communication and feedback employers and Industry. Many programs across the Department also partner with Industry, Government, and Community Partners, completing student driven projects that provide both a unique experiential learning opportunity for students, as well as a foundational connection to Missoula and the surrounding region.

## 5. Proudly Tell the UM Story

The Department work to provide regular updates on all programs and successes. Significant improvement has been made in the last two years towards increasing the positive public sentiment of the individual programs, the Industries that they serve, as well as the Missoula College and UM brand through both greater engagement with UM Marketing and Communications units, as well as direct effort within the Department.

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## **SUSTAINABLE CONSTRUCTION TECHNOLOGY**

### **Mission Statement**

Sustainable Construction Technology: Provide a safe, valuable, and attainable educational experience for all Montanans aspiring to, or wishing to advance, a career in the construction industry.

### **Degrees and Certificates Offered**

AAS in Sustainable Construction Technology, CAS in Carpentry, CAS in Construction Management, CAS Engineering Technology

### **Student Learning Goals**

1. Recognize hazards and risk associated with construction activities, create a job hazard analysis, and demonstrate safe working practices.
2. Understand the roles and responsibilities of all constituencies involved in the design and construction process.
3. Analyze construction documents for the planning, building, and management of building projects.

4. Analyze methods, materials, and equipment used to construct projects, and apply construction methods in real world project practicums.
5. Understand and implement basic project controls, project schedules, and project cost estimates.
6. Create written communications and demonstrate oral presentation skills appropriate to the discipline.
7. Apply construction skills as a member of a multi-disciplinary team.
8. Understand the basic principles of sustainable construction.
9. Demonstrate proficiencies and safety in construction technology including but not limited to the use of hand and power tools, basic carpentry, concrete, site assessment, interior finish installation, exterior finish installation, weatherization, and maintenance.
10. Demonstrate critical thinking skills as they relate to the planning, execution, and supervision of the construction process.

### STUDENT LEARNING GOALS and MEASUREMENT TOOLS

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	External Program Assessment
1. Students will demonstrate critical thinking skills and problems solving skills to be successful technicians or skilled-trades professionals in their respective disciplines and demonstrate communication skills necessary to be successful in the workplace.	X	X	X	X	
2. Students will demonstrate competency in computer literacy, mathematics, writing, and evidence of a thorough understanding of workplace and/or organizational issues.	X	X	X	X	X
3. Students will demonstrate evidence of understanding of state and federal regulations applicable to their respective technical or skilled trades programs.	X	X	X		
4. Students will demonstrate evidence through					

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	External Program Assessment
knowledge of equipment and materials that promote a safe work environment.	X	X	X	X	X
5. Students will demonstrate competency in all hands-on training courses of their respective technical skilled trades programs		X	X	X	
6. Students can earn industry certifications in most technical and skilled trades programs.	X	X	X	X	X

## RESULTS and MODIFICATIONS

Student Learning Goal	Current Practice & Modifications made to enhance learning	Outcome & Plan
Recognize hazards and risk associated with construction activities, create a job hazard analysis, and demonstrate safe working practices.	All students in SCT Two-year AAS program complete 30 OSHA certification training, MBIA/GRIP forklift certification, basic CPR/First Aid. All other Certificate pathway students complete a minimum of OSHA 10-hour safety training.	Availability of OSHA training led to adoption of minimum 10-hour OSHA (OSH 110) training as a core course for all West Campus programs. Maintain current certifications and add relevant IRC's as demanded. National certification of additional SCT instructor for OSHA training underway.
Understand the roles and responsibilities of all constituencies involved in the design and construction process.	Students are exposed to active industry participants through job site visits, guest lectures, and their own active role in the construction of the Student Built House (SBH)	Continued engagement with active industry participants. Addition of SCT Internship in 2020 will provide higher quality interactions for participating students.
Analyze construction documents for the planning, building, and management of building projects	Updated text for CSTN 261 and CSTN 282, both with primary and secondary focus on documents and document management. Development for full online delivery in progress for Fall 2023 start. Additional Courses added, CSTN147 Blueprint Reading for Construction, and CSTN 250	Continued curriculum improvement, future addition of more robust coursework related to residential project supervision, Build student participation in NAHB Student Competition for real world experience in project development and presentation. NAHB online certification "Building Management for Building

Student Learning Goal	Current Practice & Modifications made to enhance learning	Outcome & Plan
	Construction Estimating and Scheduling to improve newly offered CAS in Construction Management.	Professionals” now integrated into curriculum for CSTN 261.
Understand and implement basic project controls, project schedules, and project cost estimates	ASCRC approval of updated CAS in Construction Management based on Industry Advisory Board recommendation. Added CSTN 147 and CSTN 250 for more robust curriculum offering. Updated text for CSTN 261 with primary focus on project management and associated controls, added Pro-Core software student certification	Continued curriculum improvement. Pro-Core construction project management software certification integrated into CSXTN 250 curriculum for additional student IRC. Build student participation in NAHB Student Competition for real world experience in project development and presentation
Create written communications and demonstrate oral presentation skills appropriate to the discipline	Starting in first semester with practice in written Job Hazard Analysis, project details through all curriculum including project completion checklists, schedule reports, basic budgets and required report writing within coursework	Continued curriculum improvement, future addition of more robust coursework related to residential project supervision, Build student participation in NAHB Student Competition for real world experience in project development and presentation
Apply construction skills as a member of a multi-disciplinary team	Team based learning is encouraged in all applied classes	The program cohort model builds strong team concepts. The SBH reinforces concept and the value of each individual’s role in the success or failure of a task or overall project.
Understand the basic principles of sustainable construction	Addition of Green Building courses and Green Building CTS in 2016, offer Green Building Practicum as optional or as substitute for CSTN 299 Capstone	Integrated NAHB online certification of “high Performance Building for Building Professionals” for additional student IRC.
Demonstrate proficiencies and safety in construction technology including but not limited to the use of hand and power tools, basic carpentry, concrete, site assessment, interior finish installation, exterior finish installation, weatherization, and maintenance.	Included and reinforced in all applied coursework, implemented tool proficiency checklist and competencies as required coursework	Students gain holistic knowledge of tools and techniques, related safe handling and operation of entire suite of tools, and are evaluated on the competencies. The added proficiency checklist adds greater structure and depth to student’s exposure
Demonstrate critical thinking skills as they relate to the planning, execution, and supervision of the construction process.	Critical thinking skills reinforced with case studies throughout coursework. Active discussion and real-time student participation on issues relating to schedule, materials, and	Develop more active supervision scenarios and controls in conjunction with SBH. Build student participation in NAHB Student Competition for real world experience in project development and presentation

Student Learning Goal	Current Practice & Modifications made to enhance learning	Outcome & Plan
	other process control issues with student built house	

Curriculum Mapping				
Key: I=Introduction, D=Developed/Reinforced, M=Mastery, A=Assessment				
Degree Program: Sustainable Construction Technology Associates of Applied Science				
Courses	Intended Student Learning Outcomes			
	Demonstrate KSA's required to be a safe, confident, & productive member of the Construction Industry Workforce	Knowledge of critical thinking and problem solving related to Industry required KSA's	Recognize and apply best practices related to the processes and procedures of the Construction Industry	Applied Proficiencies in Construction Technology
OSH 110	I, A			
OSH 130 Ind. Safety and Certification-Job Site Ready	I, A	I		I
CSTN 120/122 Beginning Carpentry and Lab	I	I		I, D
CSTN 142/143 Intermediate Carpentry and Lab	I	I	I	I, D
CSTN 147 Blueprint Reading	I, D	I, D	I, D	D
CSTN 171 Site Prep, Foundations and Concrete	I	I	I	I, D
CSTN 191 01S Intro to Woodworking	I, D	I, D	I, D	I, D
CSTN 191 02S Joinery Methods	I, D	I, D	I, D	I, D
CSTN 191 03S Advanced Woodworking	D, M	D, M	D, M	D, M
CSTN 205/206 Advanced Carpentry	D, M	D	D, M	D, M
CSTN 250 Construction Estimating and Scheduling	M	D, M	D, M	D, A
CSTN 261 Building Management	D	D	I, D	

CSTN 282 Green Building I	I, D	D	I, D	I, D
CSTN 283 Green Building II	D, M	D	D, M	D
CSTN 286 Advanced Wood Buildings	D	D	I, D	
CSTN 295 Green Building Practicum	D	D	D	D
CSTN 298 SCT Internship	D	D	D	D
CSTN 299 Carpentry Capstone	D, M	D	D	D, M

## FUTURE PLANS FOR CONTINUED ASSESSMENT

The first programmatic strategic plan was finalized in 2021 with input from the SCT Industry Advisory Board, Missoula College Administration, and SCT Faculty. Implementation for the plan and tracking of progress began in AY 21-22 and continues, with regular program meeting and advisory board updates. The program identified four primary trackable strategies for continued curricular improvement, increased student recruitment and success, and overall program impact

The full plan is available for review. Progress on the primary strategic goals and major objectives of each are as follows:

**Strategic Goal #1:** Complete curriculum alignment to provide relevant, stackable pathways for students at all stations in their construction industry careers.

Progress on Objectives during review period:

1. Updated CAS in Construction Management was approved by UM ASCRC in Fall 2021 and by Board of Regents in May 2022. First students anticipated to earn the CAS in Spring of 2022, with additional intake for Fall 2023
2. To both support the new CAS and address Industry Advisory Board identified needs, course changes were made, including addition of CSTN 147 Blueprint Reading (“provide more in-depth understanding and practice in interpreting and functionally utilizing construction planning documents.”) and CSTN 250 Construction Estimating and Scheduling. (“provide relevant construction management KSA’s based on today’s dynamic construction management environment”)
3. Completed implementation of Online/Hybrid OSH130/JSR delivery and expanded delivery to additional MUS partners. Began Dual Enrollment pilot for OSH130/JSR reaching 40+ students in the first iteration on Fall of 2022
4. Identified areas for future Industry and Community identified curriculum in woodworking, finish carpentry, project supervision, and opportunities for curriculum transfer to 4-year institutions.

**Strategic Goal #2:** Extend the reach of the SCT program beyond Missoula and the surrounding region.

Progress on Objectives during review period:

1. Developed opportunities for curriculum alignment within MUS and with external institutions with OSH130/JSR offerings and began initiative with Highlands College to explore opportunities for curriculum alignment across programs and work on Joint Pathway Degree options
2. Working to increase remote and online offerings, adding CSTN 261 and CSTN 282 for full online delivery starting Fall of 2023, and CSTN 250 and CSTN 286 for Spring 2024
3. Increased outreach to local and regional high schools to add Dual Enrollment options, including OSH130/JSR, CSTN 120/122, DDSN 114, and CSTN 171 beginning Fall 2023

**Strategic Goal #3:** Increase external partnerships, industry participation, and outreach.

Progress on Objectives during review period:

1. Strengthened Industry Association Partnerships through outreach to both MCA and MBIA, representing Missoula College at both State Conferences, increased faculty participation at Association networking events, faculty attendance at national Industry conferences in both 2021 and 2022
2. Increased local and regional k-12 connections in collaboration with Missoula College/Big Sky Pathways Dual Enrollment, added OSH130/JSR offerings at multiple local secondary programs, increased opportunities for expanding dual enrollment offerings in 2023.
3. Re-established a separate advisory board for SCT with select Industry Partners, acted on recommendations from advisory board through curriculum improvement and additions,
4. Identified needs for improvement and greater focus on Marketing and Public Relations for continued student recruitment, market and community awareness, and increasing employee partnerships.

**Strategic Goal #4:** Strengthen funding model for program sustainability and faculty support

Progress on Objectives during review period:

1. Student Built Houses #4 and #5 completed and sold during review period, and SBH continues to be a critical source of program revenue. Faculty worked with SBH partner vendors and utilized strategic purchasing initiative to mitigate significant cost escalation in all construction materials.
2. Successfully partnered with AccelerateMT in DLI funding award, which on part includes full time program support for OSH130/JSR and opportunities for additional development of online course delivery and construction related training opportunities.
3. Awarded 4-year, \$60K NAHB Housing Education Leadership Program (HELP) grant, specifically for faculty support to develop and implement new CAS in Construction Management.

## Heavy Equipment Operation

### Mission Statement

The mission of the Heavy Equipment Operation Program is to provide the regional workforce with credentialed, skilled, and competent heavy equipment operators, and to be responsive to emerging workforce needs.



Students develop an understanding of basic surveying techniques, receive extensive training in safety regulations and procedures, and learn techniques for safe, knowledgeable machine operation. Students are trained to safely and properly operate and maintain a variety of heavy equipment including:

Backhoes, Crawler-Tractors, Dump Trucks, Excavators, Front-end Loaders, Scrapers.

The program also promotes an awareness of proper machine operation in a construction environment with emphasis on the ability to complete a task assigned verbally, or from job plans and grade stakes on the site. The importance of understanding the work ethic expected by employers in the construction industry is also taught.

## **Degrees and Certificates Offered**

A Certificate of Applied Science is awarded after the program is successfully completed.

## **Student Learning Goals**

1. Proper understanding and operation of heavy equipment. Time is allowed for development and demonstration of proper operational techniques.
2. Emphasis is on advanced equipment usage, problem definition and resolution, project-type earth moving assignments, proper equipment, and safety regulations. Course may allow participation in cooperative project efforts within the community.
3. Study of construction principles, specialized equipment, production estimates, and various related subjects.
4. Basic principles of surveying and the use of surveying equipment. Calculation of angles and distances to determine grade elevations. Introduction to Global Positioning Systems, lasers and their relationship to the heavy equipment operator.
5. Able to identify different types of lubricants and their applications, scheduled and preventive maintenance procedures, and importance of periodic service and maintenance. Also included are safety procedures and regulations.

## STUDENT LEARNING GOALS and MEASUREMENT TOOLS

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	External Program Assessment
7. Students will demonstrate critical thinking skills and problems solving skills to be successful technicians or skilled-trades professionals in their respective disciplines and demonstrate communication skills necessary to be successful in the workplace.		X	X		
8. Students will demonstrate competency in computer literacy, mathematics, writing, and evidence of a thorough understanding of workplace and/or organizational issues.	X	X	X		
9. Students will demonstrate evidence of understanding of state and federal regulations applicable to their respective technical or skilled trades programs.	X	X	X		
10. Students will demonstrate evidence through knowledge of equipment and materials that promote a safe work environment.	X	X	X		
11. Students will demonstrate competency in all hands-on training courses of their respective technical skilled trades programs	X	X	X		X
12. Students can earn industry certifications in most technical and skilled trades programs.	X	X	X		X

## RESULTS and MODIFICATIONS

Learning Goal results	Modifications made to enhance learning
<p>Proper understanding and operation of heavy equipment. Time is allowed for development of proper operational techniques.</p>	<p>Using the National Center for Construction Education and Research (NCCER) book which follows state and federal regulations.</p>
<p>Emphasis is on advanced equipment usage, problem definition and resolution, project-type earth moving assignments, proper equipment, and safety regulations. Course may allow participation in cooperative project efforts within the community.</p>	<p>Using the National Center for Construction Education and Research (NCCER) book which follows state and federal regulations.</p>
<p>Study of construction principles, specialized equipment, production estimates, and various related subjects Including CDL Training as it relates to being special Equipment</p>	<p>Students spend the other half of their time in lab, consistent with and following classroom time, in which students get visual testing and practical testing individually. Scores are usually high with this method of instruction. Define the ability to operate equipment and trucks as much as needed</p>
<p>Basic principles of surveying and the use of surveying equipment. Calculation of angles and distances to determine grade elevations. Introduction to Global Positioning Systems, lasers and their relationship to the heavy equipment operator.</p> <p>Able to identify Different types of lubricants and their applications, scheduled and preventive maintenance procedures, and importance of periodic service and maintenance. Also included are safety procedures and regulations</p>	<p>Students spend the other half of their time in lab, consistent with and following classroom time, in which students get visual testing and practical testing individually. Scores are usually high with this method of instruction. Define the ability to operate equipment and trucks as much as needed</p>

## Curriculum Mapping

Key: I=Introduction, D=Developed/Reinforced, M=Mastery, A=Assessment

Degree Program:  
I.E. Welding Technology Associate of Applied Science

Courses	Intended Student Learning Outcomes			
HEO 146	I, D, M	M, A	M	I
HEO 148	D, M	M, A	M	I, M, A
HEO 150	I, D, A	M, A	M	D, M
HEO 151	I, A	M, A	M	D, M
HEO 153	M	I, D, M	D, MM	D, M
SRVY 108	I	D, A	I, M	M, A

## FUTURE PLANS FOR CONTINUED ASSESSMENT

### **Strategic Goal #1:** Expand the curriculum to include Industry Advisory recommendations

Progress on Objectives during review period:

1. Started discussions with offering programs to include more content on blueprint reading and developing a deeper connection between the working plans and the project. Targeting CSTN 147 Blueprint Reading for Construction for integration into the curriculum in Fall of 2023 or Spring 2024
2. Identified options for developing computer skills and basic drafting and design. Targeting DDSN 114 Introduction to Autocad to introduce students to Industry specific software and drafting.
3. Currently working to fully build out the curriculum of the non-credit Commercial Drivers License (CDL) program for approval as a credit bearing certificate. A recommendation from Industry Advisors, this will allow for increased student capacity with eligibility for students with financial aid and Veteran's Benefits.

### **Strategic Goal #2:** Improve outside funding sources for program.

Progress on Objectives during review period:

1. Worked with local area employers to identify additions to the Industry Advisory Board to increase direct to employer connections and enhance opportunity for partnerships in equipment rental, and donated goods and services.
2. Worked with Department Chair and UM Foundation to Identify potential donors and create a strategy for engagement.

3. Partnered with local Industry, Municipalities, and other UM units to provide student driven projects to allow for greater skill development and project experience for students, exchanging expertise and heavy equipment work for cost of machine fuel and materials, greatly reducing the need for additional program funding.

4. Worked on Perkins Grant requests and secured funding over the last several years to obtain and implement equipment simulators and related training software. These simulators allow for greater practice opportunity for students on a wider variety of equipment

## **WELDING TECHNOLOGY**

### **Mission Statement**

Welding Technology: To provide the regional workforce with credentialed, skilled, and competent welders and to be responsive to emerging workforce needs. The Welding Technology Program prepares students to operate and troubleshoot a variety of welding power sources and related equipment. The program prepares student to solve problems found within the welding industry using computational skills and other problem-solving techniques essential to welding and steel fabrication. It also encourages the development of teamwork and interpersonal skills required on the job.

### **Degrees and Certificates Offered**

AAS in Welding Technology, CAS in Welding Technology

### **Student Learning Goals**

1. Demonstrate machine set-up for successful welding using the following processes, Shielded Metal Arc Welding, Flux Cored Arc Welding, Gas Tungsten Arc Welding, and Gas Metal Arc Welding.

2. Demonstrate fillet and groove welds on plate and pipe for the joining of aluminum, stainless steel, and carbon steel.

3. Inspect fillet and groove welds on plate and pipe joining all commonly used metals and identify deficiency based upon American Welding Society standards.

4. Complete practical welding exams covering the welding of aluminum, stainless steel, and carbon steel using fillet and groove welds on plate and pipe in the flat, horizontal, vertical and overhead positions based upon acceptable standards given by American Welding Society.

5. Complete written exams covering the theory of operation and procedural practice of Shielded Metal Arc Welding, Flux Cored Arc Welding, Gas Tungsten Arc Welding, and Gas Metal Arc Welding with accumulative scores of 70% or better.

6. Combine all knowledge and skills developed in the welding program to design and draw a full set of plans (blueprints) and to build an instructor-approved project using extensive welding, metal fabrication, machining processes, and automation.

7. Run and pass a qualification (certification) test to concepts and requirements of the American Society of Mechanical Engineers Section IX (Boiler and Pressure Vessel Codes) and American Welding Society D1.1 (Structural Welding- Steel).

## STUDENT LEARNING GOALS and MEASUREMENT TOOLS

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	
13. Students will demonstrate critical thinking skills and problems solving skills to be successful technicians or skilled-trades professionals in their respective disciplines and demonstrate communication skills necessary to be successful in the workplace.		✓	✓		
14. Students will demonstrate competency in computer literacy, mathematics, writing, and evidence of a thorough understanding of workplace and/or organizational issues.	✓	✓			
15. Students will demonstrate evidence of understanding of state and federal regulations applicable to their respective technical or skilled trades programs.		✓	✓		
16. Students will demonstrate evidence through knowledge of equipment and materials that promote a safe work environment.		✓	✓		
17. Students will demonstrate competency in all hands-on training courses of their respective technical skilled trades programs		✓	✓		
18. Students can earn industry certifications in most technical and skilled trades programs.		✓	✓	✓	

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	
19.					

**FUTURE PLANS FOR CONTINUED ASSESSMENT**

**Strategic Goal #1:** Increase Faculty Professional Development

Progress on Objectives during review period:

1. After turnover of faculty, the goal was set to raise the standard of professionalism and teaching excellence within the program. Recruitment was successful of an additional full time Instructor to bring stability and more opportunity to the program.
2. Lead Instructor is in process of completing the American Welding Society (AWS) testing accreditation, a rigorous curriculum of technical knowledge along with a full suite of practical testing that must be completed to achieve this high level of certification. This will allow the Welding program to teach, test, and certify successful students to the AWS standard while still in the regular course of the program, greatly increasing their employment opportunities and advancement within the Industry

**Strategic Goal #2:** Update and Upgrade existing program equipment

Progress on Objectives during review period:

1. Significant work was completed in assessing existing machinery, including welding equipment, manual mills and manual lathes, and identifying deficiencies. Progress on repair of multiple machines ahs been completed by program faculty, increasing available training equipment for students, improving the safety and operation of equipment, and providing a much more professional student experience.
2. The Welding program worked to partner with Local Stone Mason’s Union, and helped to coordinate the demonstration project of building out 6 new full-sized welding booths soon to be added to program capacity. Faculty demonstrated commitment to the University, the program, and the students, providing this effort above and beyond contract responsibilities and time.

**Strategic Goal #3:** Improve outside funding sources for program.

Progress on Objectives during review period:

1. Faculty worked with Department Chair to facilitate ongoing discussions and negotiations with Norco and Miller Welding, resulting in acceptance into the Miller Welding Educational Program and the securing of new equipment funding of approximately \$110,000. This will provide significant upgrade to aged equipment, allow for increased student capacity, as well as a better student experience.

2. Faculty worked with local area employers to reengage the Industry Advisory Board and identify additional Members to increase direct to employer connections and enhance opportunity for partnerships in equipment rental, and donated goods and service.

## **DIESEL TECHNOLOGY**

### **Mission Statement**

The mission of the Diesel Technology Program is to provide the regional workforce with credentialed, skilled and competent diesel technicians and to be responsive to emerging workforce needs.

Students in the Diesel Technology program train to be diesel mechanics that repair diesel-powered trucks and heavy equipment. Students study hydraulics, electrical systems, fuel systems, power trains, air conditioning, brakes and suspension, engine theory, and engine diagnosis, beginning with basic principles and proceeding to an advanced level of system technology. Along with these core courses, students take classes in welding, machining, computers, communications, and math. Credit for independent study is available to those desiring additional instruction in diesel mechanics.

### **Degrees and Certificates Offered**

AAS in Diesel Technology

### **Student Learning Goals**

1. Understanding of the Diesel Technology Industry
2. Become proficient in diesel engine diagnosis and repair
3. Become proficient in working in a safe and professional manner
4. Study the theory of Hydraulics as used In the heavy equipment industry
5. Study the theory of Electronics as used in the heavy equipment and trucking industry
6. Study the theory of Powertrains as used in the heavy equipment and trucking industry
7. Ability to understand the use of commonly found tools as used in the heavy equipment and trucking industry



## STUDENT LEARNING GOALS and MEASUREMENT TOOLS

Student Learning Goals	Writing and Math Placement Exam	Written Proficiency Exam	Performance Based Exams or Projects	Professional Certification	External Program Assessment
Students will demonstrate critical thinking skills and problem solving techniques in their disciplines		X	X		
Students will demonstrate competency in computer literacy, mathematics writing and a demonstrated ability to understand workplace setting	X	X	X	X	X

## RESULTS and MODIFICATIONS

Student Learning Goal	Current Practice & Modifications made to enhance learning	Outcome & Plan
Testing of written materials acquired in the classroom	Use of industry standard text books and training materials	Update of current text books and audio/video types of presentations
	Student is assigned a lab project to disassemble,	Updating of current componentry in the diesel labs

Student Learning Goal	Current Practice & Modifications made to enhance learning	Outcome & Plan
Study of principles and techniques related to various components as found in the heavy equipment/trucking industry	measure, explain operating principles and reassemble to manufacture standards	
Usage of industry recognized testing components	Students take industry standard exams	Continue usage of industry exams and expand when available to other areas when necessary
Emphasis placed on testing after repair	Students use dyno's hydraulic test benches, road test vehicles when appropriate	Increase usage of hands on type testing of lab assignm

curriculum Mapping

Key: I=Introduction, D=Developed/Reinforced, M=Mastery, A=Assessment

Degree Program:  
Diesel Technology Associates of Applied Science

Courses	Intended Student Learning Outcomes			
Students will be required to demonstrate industry standard testing		x	x	x
Students will be required to perform				



2. Need to identify relevant upcoming Industry needs, including Electric Vehicles (EV), Electronic controls, and advanced Hydraulics and work to incorporate into the existing curriculum.
3. Work on professional development to obtain greater knowledge of software and programs related to diagnostics, repair and maintenance of related Diesel machinery and vehicles.

**Strategic Goal #2: Improve Equipment and Tooling for training and lab exercises**

Progress on Objectives during review period:

1. Continue working with business and industry to acquire necessary current equipment for lab requirements, updated AC testing and recharge units, hydraulic equipment, and electronic diagnostic testing equipment.

**Strategic Goal #3: Strengthen Industry Outreach and Connection**

Progress on Objectives during review period:

1. Recruit and reengage Industry Advisory Board
2. Work to add Internship class for second year students to obtain credit while performing real world industry work.
3. Further discussion on Industry sponsored partnerships to supply dual enrollment and early enrollment students with curriculum and opportunities for employment.