



HIGHER EDUCATION COORDINATING COMMISSION
December 14, 2017

Docket Item:

Community College Approval: Chemeketa Community College, Associate of Applied Science in Diesel Technology, within 47.0605 - Diesel Mechanics Technology/Technician.

Summary:

Chemeketa Community College proposes a new AAS degree in Diesel Technology. Higher Education Coordinating Commission (HECC) staff completed a review of the proposed program. After analysis, HECC staff recommends approval of the degree as proposed.

Staff Recommendation:

The HECC recommends the adoption of the following resolution:
RESOLVED, that the Higher Education Coordinating Commission approve the following degree: AAS in Diesel Technology.



Chemeketa Community College seeks the Oregon Higher Education Coordinating Commission's approval to offer an instructional program leading to a degree in Diesel Technology.

Program Summary

The diesel technician repairs and maintains diesel power trucks and agriculture equipment and their support systems. The program is designed to prepare students for entry-level positions in diesel service technology. Training is varied to give students a broad understanding and background in the different phases of the diesel service industry. Students may have additional costs for tools and books. It is an industry specific two-year associate degree program with required internship hours. It is designed to prepare individuals to become qualified diesel service technicians. Students learn how to work on many types of diesel equipment including agricultural, construction, forestry, semi-truck and earth moving equipment. The Diesel Technology program combines technical and academic education with real-world experience through internships that are within the program. Students learn about engine fundamentals, machine hydraulics, fuel systems, electrical systems, transmissions, torque converters, undercarriage, final drives and more. During the internships, students can experience a future career firsthand through on-the-job training focused area. Upon completion of the program students will earn a Diesel Technology Associate of Applied Science Degree.

1. *Describe the need for this program by providing clear evidence.*

The demand for people with a background in diesel technology is expected to increase through 2024 due to the combination of higher than average job openings an average rate of growth according to the Employment Department for the State of Oregon. For the Mid-Valley area of Oregon (Marion, Polk, and Yamhill Counties), occupation programs are expected to grow at 13.9% with an average annual wage of \$43,056.

As of April 4, 2017, there were 101 statewide current job listings including 13 jobs in the Mid-Valley area with Oregon Employment Department along with 148 statewide current job listing including 39 jobs within proximity to McMinnville, Salem, and Dallas.

Specifically, when Chemeketa held an employer forum on December 10, 2015, employers from the following companies attended:

- * Pape'
- * TEC Equipment
- * Ag West Supply
- * McCoy Freightliner
- * Brattain International Trucking
- * North Santiam Paving Company
- * Brim Tractor
- * RPD Services
- * OVS
- * Yamhill County
- * Salem-Keizer School District

Comments that came out of the forum that help support this application include:

*Representatives from Pape' noted, "Hiring can be tricky, and a good technician is very hard to find. Currently, they have positions open that they are trying to fill. . . . Out of school/entry level techs need basic electronic skills, hydraulic skills, and very good written

and verbal skills. A high level/experienced technician would be expected to take a farm call and go there and fix anything that is thrown at them."

*Representatives from TEC Equipment noted, "There are 220 total technicians currently at TEC. That number will probably grow by 60 in the next two years due to store expansion plans in the works. . . . The pay is teens to 40s hourly. . . .

Shop/mechanics/ag used to be offered in high school, but has been cut. Now kids get to college with essentially no mechanic skills, unless they have been exposed to it on a farm or through their family."

*Representatives from Ag West Supply noted, "There is absolutely a need for this program, but it needs to be a quality program. A program with the right mentoring and sponsorships that is able to adapt to this new generation."

*Representatives from McCoy Freightliner noted, "If a person comes in with any kind of experience he is hired on the spot. .

. . They like the idea of a sponsorship program, where students work and go to school concurrently. They have worked with the PCC program and said the biggest problem is 'they have been shown all the glitz and glamour, but still don't know the basic skills needed to be an entry level tech.'"

*Representatives from Brattain International Trucking noted, "Need entry level techs to have electrical fundamentals, critical thinking, and diagnostic capabilities. Being able to collaborate and follow directions is big too."

*Representatives from North Santiam Paving Company noted, "NPSC is always looking to hire, and always has ads running. They have national ads using Zip Recruiter. . . . NSPC is a privately owned company with wages beginning in the teens to mid-30s. . . . The main skills they look for are electrical and diagnostic critical thinking."

*Representatives from RPD Services noted, "The biggest problem they have is finding technicians who can work on a multitude of equipment. The main skills they look for in entry level techs are troubleshooting and problem solving skills. Knowledge of air systems and electrical systems is also expected."

*Representatives from OVS noted, "Currently have job openings are always looking/have ads out. They recruit heavily to high schools and career fairs. To give an outlook on the job prospect-at a recent career fair they presented at, there were 287 students in a technician program and over 2,000 jobs available between all the companies at the career fair. Needless to say, the need is high!"

2. *Does the community college utilize systemic methods for meaningful and ongoing involvement of the appropriate constituencies?*

The college uses a range of sources to establish to establish outgoing partnerships with its community constituencies. Some of these partnerships include: Northwest Commission on Colleges and Universities, the State Board of Education, Community College Workforce Development, employment advisory boards and student placement connections, professional organizations, and licensing boards for appropriate occupations.

The Diesel Technology curriculum and program were approved on May 4, 2017 by the Chemeketa Community College's Curriculum Committee and then approved by Chemeketa Community College's Board of Education on October 18, 2017.

Chemeketa Community College has partnerships with local high schools and program to offer courses at the high schools for college credit. These courses will prepare students for entry into the program soon after graduating. Other required and general education courses will be valuable in preparation for entrance into the program and the workforce. Another valuable partnership with workforce and economic development partners assists building a skilled and trained workforce ready to enter their fields immediately upon completion of programs. The

Diesel Technology program has formed an advisory committee composed of professionals across the mid-Willamette Valley:

Pat Thomas, McCoy Freightliner
Phil Tingle, McCoy Freightliner
Aaron Hiatt, Pape'
Tom Kowash, Pape'
David Farley, Salem-Keizer School District
Bill Fisher, TEC Equipment
Jerry Warren, TEC Equipment

3. *Is the community college program aligned with appropriate education, workforce development, and economic development programs?*

Students will take six diesel technology courses during the six terms they are enrolled in the program. Each course in the program will build on the skills required to become a diesel technician:

DSL101—Diesel Technology 1—Examines engine theory, engine components, and proper diesel engine rebuild procedures. Introduces basic engine electrical and fuel systems, shop tool use and maintenance. Includes lift truck inspection and operator training.

DSL102—Diesel Technology 2— Explores the operations of all major fuel injection devices including diesel fuels, fuel transfer pumps, fuel nozzles, fuel injectors, filtration systems, metering systems and governing systems. Examines basic electrical theory, electrical components, and proper electric diagnostic procedures. Introduces basic electrical systems and engine controls, diagnostic tool use and maintenance.

DSL103—Diesel Technology 3— Explores concepts in gear transmissions, differentials and clutches involved in the application of diesel-powered vehicles. Covers fundamentals of hydraulics in theory and shop practice. Covers heavy duty air conditioning operation, troubleshooting and system repair.

DSL201—Diesel Technology 4— Covers Preventative Maintenance Inspection (PMI) of vehicles, Department of Transportation (DOT) out of service criteria and scheduling including Detroit Diesel Electronic Control (DDEC) operation and diagnostics. Examines concepts in medium/heavy duty truck brake systems, suspension, and steering, brake systems, wheels and tires. Emphasizes safety and the use of service manuals.

DSL202—Diesel Technology 5--- Introduces advanced theory and applications of automatic and power shift transmissions used in the heavy equipment industry. Covers fuel injection pumps and their applications, fuel system diagnostics and electronic engine controls.

DSL203—Diesel Technology 6-- Covers advanced electrical theory, electrical components, and proper electric diagnostic and repair procedures. Includes electrical systems, diagnostic tool use and maintenance. Covers advanced hydraulics and hydrostatics used on heavy equipment, farm machinery, marine equipment, hydraulic cranes, backhoes, and other equipment. Emphasizes troubleshooting.

These courses were based on the discussion on employers' needs at the forum held in December, 2015. A vote was sent to the advisory board on February 6, 2017 with four of the six members agreeing that Chemeketa ought to start this Diesel Technology program.

Chemeketa's Diesel Technology program will lead to a two-year Associates of Applied Science degree with employable skills at the end of the program. With an average annual wage of over \$43,000 per year, it will allow these students to enter the workforce in a family wage career.

This program will work with local high schools and dual credit programs to allow high schools to prepare students for basic courses needed and to take these while in high school for dual credit. Students graduating from high school could enter the program at an earlier time if properly prepared and able to meet the program prerequisite requirements of the program. The program prerequisites are:

MTH020—Basic Mathematics

RD090—College Textbook Reading

WR080—Basic Writing

Students may be able to take these courses (or higher) while in high school and be able to reduce some of their workload while attending the program:

MTH052—Intro to Algebra and Geometry (or higher) WR088—Introduction to Technical Writing 1 (or higher) PSY104—Workplace Psychology (or higher) CIS101—Computer Applications (or higher)

Six hours of electives from different discipline areas to fulfill general education requirements needed for the AAS degree.

4. *Does the community college program lead to the student achievement of academic and technical knowledge, skills and related proficiencies?*

Students will take six Diesel Technology courses, each course is scaffolded in such a manner so that the skills learned in one course are used and reinforced in subsequent courses to reinforce learning. Each course focuses on a specific components of the diesel engine.

Courses required for the program lead to the outcomes that students ought to be able to accomplish:

- Demonstrate and use industry safety standards.
- Demonstrate math skills using formulas to find force, pressure, area, and volume.
- Use diagnostic simulators to diagnose and troubleshoot system components.
- Demonstrate troubleshooting, maintenance and repair procedures for fuel systems and transmissions.
- Demonstrate troubleshooting, maintenance and repair procedures for brake systems and components.
- Demonstrate troubleshooting, maintenance and repair procedures for powertrain systems and hydraulics.
- Demonstrate troubleshooting, maintenance and repair procedures for electrical systems.

Learning will be ensured through the assessment of these program outcomes with the following methods:

For each class, there will be a comprehensive written exam and an individual skills assessment covering material for that course that will need to be passed with a 70% or better. This will be a program assessment in each of the six courses to progress with the cohort into the next course. Assessments will be given throughout the program consisting of multiple choice and short answer written exams.

In DSL203, a comprehensive skills exam covering course material from all six DSL courses. Internship supervisor will provide written feedback on student skills. Instructional methods within the program include lecture and laboratory. The lecture and laboratory portion of the curriculum will be on site at the college with hands-on learning activities and assessment. The college has a unit planning process that includes a program assessment on an annual basis. Student, faculty, advisory committee, and administrative collaboration is incorporated to ensure students are prepared with appropriate skills to enter the workforce and meet the requirements of being a diesel technologist.

The program specifically prepares a student to be prepared through internship opportunities that are embedded within the course.

5. *Does the community college identify and have the resources to develop, implement and sustain the program?*

* The Northwest Commission on Collages and Universities (NWCCU) accredits Chemeketa Community College.

*The program should be self-supporting over the next three years projected revenues and expenses:

Year 1: Revenue \$180,000, Expenditures \$96,727; Institutional Financial Support \$60,000/year
Year 2: Revenue \$360,000, Expenditures \$187,104; Institutional Financial Support \$60,000/year
Year 3: Revenue \$360,000, Expenditures \$187,104; Institutional Financial Support \$60,000/year

Chemeketa Community College has begun programs over the last fifty plus years and has had the institutional support in hiring qualified and trained faculty to teach in all CTE programs. The Diesel Technology program and courses have been developed and approved by the employer-based advisory committee, as well as approved by the college's Curriculum Committee, and Chemeketa Community College's Board of Education.

Faculty will regularly participate in professional development activities to stay current and up-to-date with industry changes and requirements, which will translate into the classroom learning environment.

This program will reside at the Polk Center of Chemeketa Community College.

The college has strong relationships with industry partners/employers and will continue to foster these relationships. Chemeketa had an employer forum to gauge the viability of starting this program, has formed an advisory committee to provide insight into their program, and will continue to work with local industry leaders and educational institutions to recruit students for this program.

Assurances

Portland Community College has met or will meet the four institutional assurances required for program application.

1. *Access.* The college and program will affirmatively provide access, accommodations, flexibility, and additional/supplemental services for special populations and protected classes of students.
2. *Continuous Improvement.* The college has assessment, evaluation, feedback, and continuous

improvement processes or systems in place. For the proposed program, there will be opportunities for input from and concerning the instructor(s), students, employers, and other partners/stakeholders. Program need and labor market information will be periodically re-evaluated and changes will be requested as needed.

3. *Adverse impact and detrimental duplication.* The college will follow all current laws, rules, and procedures and has made good faith efforts to avoid or resolve adverse *intersegmental* and *intra*segmental impact and detrimental duplication problems with other relevant programs or institutions.
4. *Program records maintenance and congruence.* The college acknowledges that the records concerning the program title, curriculum, CIP code, credit hours, etc. maintained by the Office are the official records and it is the college's responsibility to keep their records aligned with those of the Office. The college will not make changes to the program without informing and/or receiving approval from the Office.