

**Proposal for New Instructional Program
Western Nebraska Community College**

I. Descriptive Information

Name of Institution: Western Nebraska Community College (WNCC)

Name of the Program: Diesel, Truck, and Heavy Equipment Technology

Degrees/credentials to be awarded: Certificate, Diploma, Associate of Applied Science

Other programs offered in this field: Automotive Technology (certificate/diploma/associate of applied science degree)

CIP Code: 47.0302

Administrative Units: This degree will be part of the Applied Technology Division.

Proposed delivery site, and type of delivery: The program will be offered on the main campus of WNCC in Scottsbluff and leased/donated facilities in Scottsbluff, NE. Delivery will utilize a combination of traditional lecture-lab for program core classes, and traditional lecture-lab and/or online delivery for general education classes utilizing the college's learning management system.

Date approved by governing board: December 16, 2020

Proposed program starting date: Fall 2021

Description and Purpose of the Program

Diesel, Truck, and Heavy Equipment Technology is a proposed program at WNCC offering awards of certificate, diploma, and associate of applied science degree. The program is designed to develop the skillsets needed for the repair of construction and agricultural medium/heavy equipment as well as those necessary for a more generalized track in diesel truck technology, a critical need identified by regional businesses and industry.

The proposed program provides a curriculum that helps meet the workforce needs of the region in the areas of diesel engine, powertrain, and electrical/electronic systems repair. In addition, this program extends the mechanical, diesel, and automotive pathways found in select regional high schools and serves to meet the career goals of students interested in these fields of study.

In early fall 2020, a group of regional mid-level industry managers and lead technicians were brought together to participate in a modified Developing a Curriculum (DACUM) process that was used to first identify skillsets specific to the aforementioned areas and then to combine the skillsets into logically organized groups to create individual courses.

The resulting two-year, five-term, associate of applied science program requires minimum 64-66 credit hours including 15 credit hours of general education requirements and 49 credit hours specific to the degree program including 14 new diesel technology (DSLTT) courses, three existing automotive technology (AUTO) courses, one existing advanced manufacturing technology (AMDT) course, one existing welding technology course (WELD), and one existing information technology (INFO) course.

The pathway is designed to be deconstructed to create two certificate programs that are stackable leading to either a diploma or the associate of applied science degree. One certificate (Engine and Powertrain) would have a total of 16 credits required; the other (Advanced Electrical/ Mechanical

Certificate) would require 19 credits. The diploma would require 30 total credit hour, nine of which would be general education requirements and 21 specific to the program.

Program Outcomes

- Perform diagnostics, service, maintenance, and repair on diesel and industrial engines following recommended procedures and service information.
- Perform diagnostics, service, maintenance, and repair on electrical and electronic systems of tractor-trailer fleet vehicles, construction and agricultural equipment following recommended procedures and service information.
- Perform diagnostics, service, maintenance, and repair on powertrain, hydraulic and brake systems of tractor-trailer fleet vehicles, construction and agricultural equipment following recommended procedures and service information.
- Perform diagnostics, service, maintenance, and repair on HVAC systems of tractor-trailer fleet vehicles, construction and agricultural equipment following recommended procedures and service information.
- Perform diagnostics, service, maintenance, and repair on suspension, steering and alignment systems of tractor-trailer fleet vehicles, construction and agricultural equipment following recommended procedures and service information.
- Apply individual and clustered skill sets for diesel and alternate-fuel system engines, electrical and electronic systems, emissions, HVAC, hydraulic and brake systems used in tractor-trailer fleet vehicle, construction and agricultural equipment.
- Exhibit professional conduct and ethics in the workplace necessary for successful employment in the service industry.
- Demonstrate adherence to safe practices and safety protocols of the Diesel, Truck, and heavy equipment technology industry.

Pathway

First Semester – Fall		Credit Hours
AMDT-1000	OSHA 10 for General Industry	1.0
AUTO-1210	Auto Parts Specialist	2.0
DSL-1010	Basic Shop Skills	2.0
DSL-1350	Safety and Emergency Response	1.0
WELD-1015	Introduction to Welding	3.0
	Oral Communication, Personal Development GE Elective –	3.0
	Writing Communication GE Elective	<u>3.0</u>
	Total	15.0
Second Semester – Spring		
DSL-1110	Diesel Engines I	3.0
DSL-2110	Diesel Engines II	3.0
DSL-1150	Electrical I	2.0
DSL-1250	Powertrain	4.0
	Quantitative Reasoning GE Elective	<u>3.0- 4.0</u>

	Total	15.0 – 16.0
Summer Term		
DSLTL-2500	Diesel Tech Internship	<u>3.0</u>
	Total	3.0
Third Semester – Fall		
DSLTL-1050	Brake Systems	3.0
DSLTL-2150	Electrical II	3.0
DSLTL-1210	Essential Professional Skills	2.0
DSLTL-2350	Hydraulics	2.0
DSLTL-2010	Suspension, Steering & Alignment	3.0
	Oral Communications, Personal Development Elective	<u>3.0</u>
	Total	16.0
Fourth Semester – Spring		
AUTO-1350	Automotive Heating & Air Conditioning	4.0
AUTO-1360	Automotive Air Conditioning R134-A	1.0
DSLTL-2200	Electronics	2.0
DSLTL-2250	Emissions	2.0
INFO-1100	Microcomputer Applications	3.0
	Lab or Social Science GE Elective	<u>3.0 – 4.0</u>
	Total	15.0 – 16.0
	Total Credit Hour Requirements	64.0 – 66.0

II. Review Criteria

A. Centrality to Role and Mission

As a comprehensive community college, Western Nebraska Community College (WNCC) is committed to serving the residents of the 12- and one-half counties that make up the Panhandle of Nebraska with higher education and lifelong learning opportunities. WNCC's mission statement "...assures learning opportunities for all – *enriching lives, invigorating communities, creating futures,*" and pursuant to Nebraska Revised Statute [85-962](#), this includes providing applied technology and continuing education to ensure economic opportunities for future employees and the stability and growth of regional businesses and industries.

The proposed Diesel, Truck, and Heavy Equipment Technology program aligns with Nebraska's Legislative mandate and WNCC's organizational structure as a career and technical education program resulting in awards that conform to the approved requirements for a certificate, diploma, and associate of applied science degree. There is also potential to use elements of the program for future use in specialized industry training in WNCC's area of workforce development.

B. Evidence of Need and Demand

1. *Need for the program*

There is evidence of an increasing need for medium-heavy equipment and truck technicians and diesel engine specialists in the Nebraska Panhandle.

A review of the *Emsi Q3 2020 Data Set* reports “aggressive job posting demand over a deep supply of regional jobs” for the period of September 2016 to April 2019. In 2017, 195 jobs were posted in the Panhandle for “farm equipment mechanics and service technicians” and “bus and truck mechanics and diesel engine specialists;” the national average for area this size was 72. The median advertised salary for these employment categories in the Panhandle for this same time period was \$41,100. The top hard skill listed in job postings and profiles was experience with diesel engines with mechanics listed as the second most listed desirable hard skill. The report anticipates a 12.7% decrease in the number of employment opportunities for “farm equipment mechanics and service technicians” and “bus and truck mechanics and diesel engine specialists” in the Panhandle by 2030, but the demand in the area continues to exceed a stable national average by 126%.

Due to the rural nature of the Panhandle, there is a greater diversity for specific skillsets due the greater diversity of employers. This diversity can be generalized to four occupations identified in the H3 report (*4th quarter 2017; Annual openings form 2016-2026 Long-term Occupational Projections*) and are shown in the table below.

Occupation	Percent Change 2016-26	Annual Openings	Average Hourly Wage
Bus and truck Mechanics and Diesel Engine Specialists	7.735%	21	\$20.07
Farm Equipment Mechanics and Service Technicians	-8.88%	13	\$21.09
Industrial Machinery Mechanics	14.95%	12	\$20.28
Mobile Heavy Equipment Mechanics, Except Engines	2.90%	6	\$19.75

Even though there is a decline reported for “farm equipment mechanics and service technicians.” given the importance of agriculture to the regional economy combined with the second largest number of annual openings in the list merits its significance within this program.

2. Local Demand for the Program

Letters of support from Panhandle region business and industry employers found in Appendix (A) substantiate the need for employees with the necessary skill sets to not only keep local businesses operational but as a basis for expanding their businesses. Excerpts from these letters directly underscore the need for this proposed program: “...current needs for diesel

tech's exceed 15 within the next year," "...raise our own...," "...we will again fall short of meeting market demand for performing truck service and repair in our dealerships," "...most difficult ones [position] there is to fill," and "...may take 6 months or longer before interviewing a candidate with experience or knowledge of the industry."

This proposed program would provide a pathway for regional students choosing to enter the profession. A September 2020 survey of local high school juniors and seniors already involved in career and technical programs at the high school level indicate significant interest in the program.

Scottsbluff High School	13
Gering High School	16
Morrill High School	3

Both Scottsbluff and Gering high schools have pathways or are offering courses that would feed into the proposed Diesel, Truck, and Heavy Equipment Technology program.

C. Adequacy of Resources

1. Faculty and Staff Resources

The new program will require the assignment of one (1) full-time instructor, and the college is committed to funding a 175-day faculty member to the program. The proposed program requires select automotive technology courses already offered at WNCC. The college's automotive technology program employs two instructors so the program is able to absorb the impact of the additional students thus keeping the need for new instructors to the proposed one additional full-time faculty member. There is no full-time support staff available in the area.

2. Physical Facilities

Working collaboratively with a local industry partner, the space necessary for the program has been identified at a vacant diesel truck repair facility in Scottsbluff. There would be no immediate need for additional space or facilities. However, with anticipated growth, an additional facility and/or renovated space may be needed.

Within the WNCC Master Facilities Plan, there is opportunity for an addition to the existing Applied Technology Building or for a separate building in a location identified for future buildings. The five-year lease with a local industry partner provides adequate time for the college to monitor the progress of the proposed program, finalize facilities projects underway, and begin planning and budgeting for a potential new facility.

3. Instructional Equipment and Informational Resources

Equipment for the program will come from a combination of sources. Select equipment currently used in the automotive technology program will be used to support those classes common to both automotive technology and the proposed program. Local and regional employers have pledged on-going access to major truck components (e.g. engine, powertrain, electrical) to be used in the program for hands-on training and potential rebuild and reuse.

Use of new and fully- or partially-operational used diesel and heavy equipment also has been pledged by select industry partners. Access to equipment would be available for short to intermediate time periods coinciding with didactic portions of training. Equipment would be

available on a temporary basis for training use at the instructional facility and/or at the businesses locations.

Major capital and intermediate-life equipment for instruction will be supported by a combination of sources including the general operating budget, WNCC Foundation, and donations or industry contributions. This proposed program is integrated into WNCC's Perkins V 2020-24 plan allowing for access to those funds in future years.

The library and technology resources, including staffing and physical resources, already in place at the college are adequate to support the program.

4. Budget Projections

Major capital equipment investments will be necessary in the first two years of the program. Examples of expenditures include: self-contained diesel test engine, transmission trainers, clutch and brake trainers; electrical, multiplex and electronic trainers; truck lifts, transmission jacks, common and specialty tools; steering and wheel alignment system. In program years three and later projected annual revenue is in excess of projected annual expense. Projected expense and revenue estimates for a period of five (5) years are attached as Appendices B and C, respectively

Currently owned equipment will be shared used by this program and the existing Automotive Technology program to the extent possible. However, equipment not currently owned or available for short term use from regional businesses must be purchased. Several of the program's letters of support reference willingness to assist the program. Most critical will be access to high cost major truck and heavy equipment components, and short-term access to operational equipment both new and in need of repair.

D. Avoidance of Unnecessary Duplication

The creation of the proposed program at WNCC will not result in unnecessary duplication. The other five public community colleges in Nebraska all offer similarly titled degrees but none offer a composite of certificates, diplomas, and associate-level degree of comparable groupings of selected courses.

Community College	Program Name and Awards
Central Community College	Diesel Technology: AAS, Diploma, Certificates – Basic Mechanics; Diesel Electrical; Diesel Engine Performance; Hydraulics; Truck Systems
Metropolitan Community College	Diesel Technology - Diesel Service: AAS Diesel Technology – Heavy Equipment: AAS Diesel Technology – Power Generation: AAS Diesel Truck: Career Certificate
Mid-Plains Community College	Diesel Technology: AAS, Diploma, Certificates – Basic Engine & Electrical; Fuel Systems; Powertrain

Northeast Community College	Diesel Technology – Ag: AAS Diesel Technology – Truck: AAS
Southeast Community College	Deere Construction and Forestry Equipment Tech: AAS Diesel Technology: AAS Diesel-Ag Equipment Service Technology: AAS

The grouping of courses, and specific resulting certificates, were developed based on identified need from regional employers. In addition, the geographically closest program at Mid-Plains Community College (176 miles) offers only an associates-level degree.

Outside of Nebraska, the closest program is located at Laramie County Community College in Cheyenne, Wyoming (98 miles) and offers a diploma only in diesel technology.

E. Consistency with the Comprehensive Statewide Plan for Postsecondary Education

The proposed Diesel, Truck, and Heavy Equipment Technology program aligns with the [Comprehensive Statewide Plan for Postsecondary Education](#). The program will provide education “...that prepares students for productive and fulfilling lives...” and “...enhances workforce development...” In addition, the program will serve to support expansion of the economic and population base by training for in-demand professions identified by Emsi and as H3 (*4th quarter 2017; Annual openings form 2016-2026 Long-term Occupational Projections*) in the Nebraska Panhandle that are applicable to this degree.

The program has been developed in response to both employer need and student demand as presented earlier in sections B.1 and B.2, respectively. Nine major regional businesses and industries have met and agreed to collaborate with the college to support the program. This support appears in a variety of forms including access to common and specialized equipment for training, personnel having specialized knowledge to assist in training of students, and internships, and thee lease of training facilities at highly reduced rates.

A relatively unique agreement was created to standardize the hourly rates of pay for students on internships and while working concurrent to enrollment in the program. The hourly rate is in the range of regional starting pay for new employees in these businesses and industries. The basis of this agreement came about as the nine major regional businesses and industries wanted to assure the students received exposure to their businesses while eliminating undue influence through wage enhancement.

TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

Personnel	(FY22) Year 1		(FY23) Year 2		(FY24) Year 3		(FY25) Year 4		(FY26) Year 5		Total	
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost
Faculty ¹	1	\$69,850	1	\$71,946	1	\$74,104	1	\$76,327	1	\$78,617	1	\$370,843
Professional											0	\$0
Graduate assistants											0	\$0
Support staff											0	\$0
Subtotal	1	\$69,850	1	\$71,946	1	\$74,104	1	\$76,327	1	\$78,617	1	\$370,843
Operating												
General Operating ²		\$12,000		\$12,250		\$12,500		\$12,750		\$13,000		\$62,500
Equipment ³		\$178,639		\$111,050		\$7,500		\$7,500		\$7,500		\$289,689
Utilities/Maintenance		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$37,500
New or renovated space ⁴		\$46,680		\$31,680		\$31,680		\$31,680		\$31,680		\$173,400
Library/Information Resources												\$0
Other												\$0
Subtotal		\$244,819		\$162,480		\$51,680		\$51,930		\$52,180		\$563,089
Total Expenses	1	\$314,669.00	1	\$234,425.50	1	\$125,783.87	1	\$128,256.98	1	\$130,796.79		\$933,932

FOOTNOTES

- ¹ Additional full-time equivalent faculty and related salary and fringe benefit expenditures needed to implement and maintain the program. Year 1 - Base plus 27% of base for benefits; Years 2 to 5 - 3% increase over previous year's salary/benefits
- ² Educational supplies, faculty development, lab/shop supplies, travel, memberships, office supplies, equipment maintenance.
- ³ Expenditures for the acquisition of new equipment necessary for start-up and operation of the program.
- ⁴ Projected expenditures: Year 1 - Facility lease plus IT, electrical, etc. infrastructure and installation; equipment installation; Years 2 to 5 - Facility lease.

TABLE 2: REVENUE SOURCES FOR PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

	FY(22) Year 1	(FY23) Year 2	(FY24) Year 3	(FY25) Year 4	(FY26) Year 5	Total
Reallocation of Existing Funds						\$0
Required New Public Funds						\$0
1. State Funds						\$0
2. Local Tax Funds (community colleges)						\$0
Tuition and Fees ¹	\$35,744	\$89,360	\$116,168	\$125,104	\$125,104	\$491,480
Other Funding						
Aulick Industries ²	\$31,680	\$31,680	\$31,680	\$31,680	\$31,680	\$158,400
Local & Regional Businesses - pledged (as of 18 Dec 20) ³	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$40,000
Local & Regional Businesses - estimated pledges ⁴	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000
Total Revenue	\$105,424	\$159,040	\$185,848	\$194,784	\$194,784	\$839,880

FOOTNOTES

1	Fees/ student/yr.	\$500		Tuition/Fees	\$124
				Ave. Cr. Hr./ Student/yr.	32
AY	Enrollment Yr. 1	Attrition - yr. 1 -> yr. 2	Enrollment Yr.2	Total T&F plus Course Fees	
22	8	1	0	\$35,744	
23	13	2	7	\$89,360	
24	15	2	11	\$116,168	
25	15	2	13	\$125,104	
26	15	2	13	\$125,104	

² Return of lease payment by lessor to WNC Foundation per lease agreement.

³ TWNCC Foundaiton pledge appeal letters distributed mid-November 2020. As of December 12, 2020 one single-donor pledge has been received. Total amount pledged averaged over five year. Pledge is a combination of in-kind value of employee time as specialty presenter/specialty lab instructor and in-kind value of discounted equipment short-term lease.

⁴ Estimated value of additional in-kind or financial donation pleges beyond donations already committed from business and industry partners as generally referenced in letters of support.