



**Internal Program Review  
Self-Study Report**

**Program Name**  
Diesel Technology

**Credentials Offered**  
Certificate of Applied Science in Diesel Technology: 42 credits  
Associate of Applied Science in Diesel Technology: 72 semester credits

**Self-Study Completed by:**  
Rick Purcell, Faculty  
Derrick Hauer, Faculty  
Tammy Burke, Trades Division Chair

**Date Completed:**  
2019-2020

### **A. Introduction –**

The Diesel Technology program prepares students to enter various segments of the diesel repair industry as an entry-level technician. This includes, but is not limited to, the agricultural, the industrial equipment, and the heavy-duty diesel truck repair industry. This program provides comprehensive training in maintenance, diagnosis, and repair of related electrical/electronic systems, mobile hydraulic systems, manual and hydraulic drive trains, brakes, air systems, diesel engines, general maintenance, alignment and undercarriages, HVAC, and transport refrigeration systems as used in equipment common to the diesel repair industry.

Potential employers include agriculture and truck dealerships, truck fleets, mining companies, construction companies, oil companies, farms and ranches, and independent truck repair shops.

### **B. Alignment with Mission, Strategic Goals and Core Themes –**

**Helena College Mission Statement-** Helena College, a comprehensive two-year college, provides access to and support of high quality lifelong educational opportunities for our diverse community.

**Program Mission Alignment-** The Diesel Technology program prepares students to enter various segments of the diesel repair industry as an entry-level technician. This includes, but is not limited to agricultural, industrial equipment and the heavy-duty diesel truck repair industry. This program provides comprehensive training in maintenance, diagnosis, and repair of related electrical/electronic systems, mobile hydraulic systems, manual and hydraulic drive trains, brakes, air systems, diesel engines, general maintenance, alignment and undercarriages, HVAC, and transport refrigeration systems as used in equipment common to the diesel repair industry. After graduating, you will be well prepared for a career as a diesel technician.

The strategic goals of Helena College are listed below:

- Strategic goal #1 – promote student success and achievement
- Strategic goal #2 – advance academic excellence and scholarship
- Strategic goal #3 – build community engagement and partnerships
- Strategic goal #4 – model and foster equity, inclusion, and cultural competency 1.
- Strategic goal #5 – ensure institutional integrity

The Goals of the Diesel Technology Program align with the above as follows:

1. Partner for Student Success Integrate Assessment/Planning
2. Attain Excellence
3. Support the Community
4. Advance the Institution
5. Develop Resources

By continually updating equipment and curriculum as advised by the Diesel Technology Advisory Board, it is the goal of the program to be relevant and provide students with the best

experience possible. The program is now being offered. This program has had consistent enrollment and completion and continues to be successful.

**C. Alignment with Community Needs (Academic Programs Only) –**

The Diesel technology program has an advisory board which meets twice a year. The board consists of local employers as well as general managers from major truck manufactures. These individuals are: Dave Broughton, Tri-State Truck & Equipment, Great Falls MT. Travis Sandau, I-State Truck Center, Missoula MT. Bob Moe, Titan Machinery, Inc, West Fargo ND . Dave Garner, Mergenthaler Transfer & Storage, Helena MT. Jim Dusenberry, J&D Truck Repair, Helena MT. This board helps guide curriculum in ways such as adding a new electronics class to better prepare students for current technology. This included advice on what would be taught as well as equipment requirements. Equipment was requested through the budget process and has been implemented. The addition of a safety class to include OSHA 10 was added. We also added a particular transmission type that would fit the needs of industry, which was also acquired through the budget process and with Perkins Grand funding. These are only some recent changes. In the effort to maintain continuous quality improvement we feel every year there should be changes made as needed to meet the ever-changing industry in which we are placing students.

**D. Student Participation and Success-**

This program has maintained consistent enrollment numbers with retention and completion above national standards. Students in this program have excellent placement in the workforce and there is very positive feedback from the advisory board that students leave the program prepared for industry. Please see data in appendix.

**E. Student Learning Outcomes and/or Program Goals –**

Upon successful completion of this program, a student will be able to:

- 1) Demonstrate the ability to safely work in a shop environment
- 2) Demonstrate their work ethic and professionalism
- 3) Demonstrate their understanding of diesel systems operation and function of components
- 4) Demonstrate the ability to properly diagnose the system and perform the proper repairs
- 5) Demonstrate their ability to work in a live shop environment by interacting with customers, diagnosing and repairing a multitude of failures, working well with other students and properly completing work orders.

**F. Curriculum and Instruction (Academic Programs Only) –**

Based on recommendations from our advisory board and due to suggested curriculum guidelines associated the Diesel program made changes in equipment, technology, and curriculum to update and improve the program. As indicated in the degree planning sheet the program is a comprehensive two-year Diesel program.

**Required Courses**

Course #	Course Title	CR	Pre - Requisites
<b>First Semester (17 credits)</b>			
DST 108	Industrial Practices for Diesel Technology	3	
DST 112	Diesel Electrical Systems	5	
DST 142	Hydraulics	7	DST112
M 111T	Technical Math	3	Co-requisite DST 142
<b>Second Semester (20 credits)</b>			
DST 145	Diesel Engine Repair	5	DST112
DST 240	HD Manual Drive Trains	5	DST112
DST 245	HD Hydraulic Drive Trains	3	DST112 and DST142
DST 107	Precision Measurement	1	
WRIT 121T	Intro to Tech Writing	3	WRIT 096 if placement score indicates
<b>Third Semester (18 credits)</b>			
DST 200	Diesel Engine Performance	6	DST112 and DST145
DST 210	Diesel Maintenance Practices	5	DST112
DST 255	HD Brakes & Undercarriage	7	DST112
<b>Fourth Semester (17 credits)</b>			
DST 130	Diesel HVAC	4	DST112
DST 211	Electronic Systems	6	DST 112
DST 265	Applied Lab Experience	3	2nd year standing or instructor approval
DST 295	Applied Field Work	4	2nd year standing or instructor approval
COMX 106	Communicating in a Dynamic Workplace	2	

**G. Faculty/Staff Profile –**

Helena College UM employs two full-time diesel technology instructors.

Purcell, Rick  
Diesel Technology  
A.O.S., Universal Technical Institute  
at Helena College since fall 2008

Hauer, Derrick  
Diesel Technology  
A.A.S., Helena College  
at Helena College since Fall 2014

**H. Fiscal and Physical Resources-**

Helena College supports and provides adequate funding of the diesel technology program and this has been stable over the past five years. Perkins Grant funding is also utilized to update equipment and provide professional development for faculty. Infusions of budgetary support for Diesel Technology Program occurred when equipment maintenance and repair and purchase of new equipment was required.

**I. Recommendations and Preliminary Implementation Plan -**

1. Using industry standards and advisory committee input, Helena College will update curriculum, equipment, and skill development to include development of Commercial Driver's License as part of, or prerequisite to the program.
2. Helena College will continue to integrate student acquisition of industry-recognized credentials into the curriculum.

3. Increase instructor professional development through attendance at national educators' conferences and institutes.
4. Build career awareness by collaborating with industry partners, secondary schools and US Department of Labor Job Service.
5. Explore apprenticeship/internship opportunities for students to increased work-based learning experiences.

**J. Program Review Data Summary –**  
Please see attached data summary

**K. Appendix (Additional data or exhibits)**

**Appendix A- Data Summary Tables**

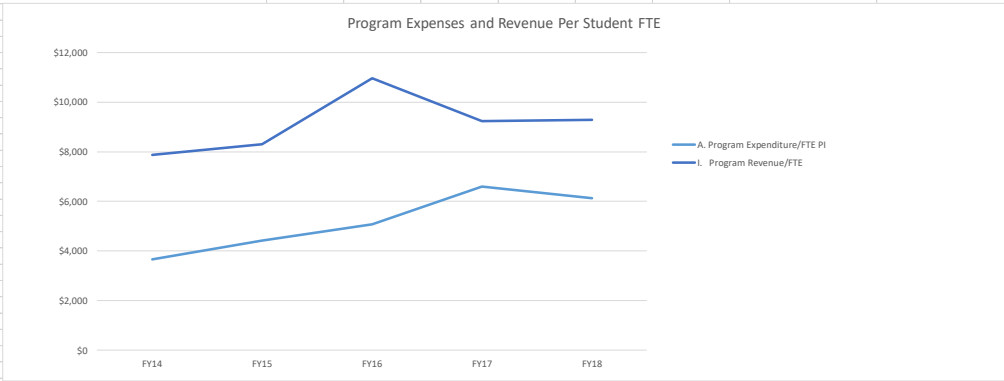
Diesel Technology 2013-2018								
Program Review Data Summary								
Fiscal and Physical Resources								
Data Definition: Instructional costs include program personnel and operating expenses	FY14	FY15	FY16	FY17	FY18	5 Year Ave	Program Notes	Source
A. Program Expenditure/FTE PI	\$3,657	\$4,419	\$5,067	\$6,598	\$6,123	\$5,173		Institutional Research/Finance
B. Average HC Program Expenditure/FTE	\$5,032	\$4,881	\$5,354	\$6,512	\$8,252	\$6,006		Institutional Research/Finance
C. Program Expenditure/Completion	\$12,189	\$15,614	\$15,202	\$14,516	\$20,070	\$15,518		Institutional Research/Finance
D. Average HC Program Expenditure/Completion	\$13,353	\$18,071	\$12,712	\$16,356	\$15,599	\$14,101		Institutional Research/Finance
E. Student Program Fees-Fund Balance	\$3,041	\$3,215	\$3,048	\$2,501	\$3,206	\$3,002	H60280	Institutional Research/Finance
F. Student Program Fees-Fund Expenditures	\$7,910	\$0	\$183	\$0	\$7,176	\$3,054	H60280	Institutional Research/Finance
G. Total Program Expense	\$182,841	\$234,208	\$197,630	\$217,733	\$180,634	\$202,609	Personnel+Operating	Institutional Research/Finance
H. Total Program Revenue	\$394,110	\$440,324	\$544,025	\$299,943	\$301,600	\$396,000	State Approp+Tuition	Institutional Research/Finance
I. Program Revenue/FTE	\$7,882	\$8,308	\$10,967	\$9,229	\$9,280	\$8,798	Total Revenue/FTE	Institutional Research/Finance

KPI or PI	Key Performance Indicator or Performance Indicator for Program Effectiveness under Strategic Enrollment Planning/Management							

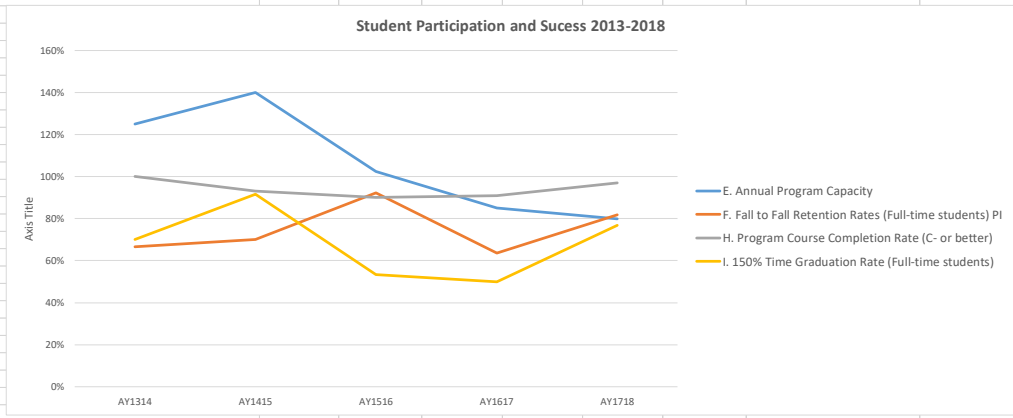
Program Expenses and Revenue Per Student FTE



Fiscal Year	A. Program Expenditure/FTE PI	I. Program Revenue/FTE
FY14	\$3,657	\$7,882
FY15	\$4,419	\$8,308
FY16	\$5,067	\$10,967
FY17	\$6,598	\$9,229
FY18	\$6,123	\$8,798

Diesel Technology 2013-2018								
Program Review Data Summary								
Student Participation and Success								
Data Definition:	AY1314	AY1415	AY1516	AY1617	AY1718	5 Year Ave	Program Notes	Source
A. Transfer rates to 4-year colleges (AA/AS)	N/A	N/A	N/A	N/A	N/A	N/A		Institutional Research
B. Program Capacity (Headcount)	40	40	40	40	40	40		Institutional Research
C. Annual Headcount Enrollment (Unduplicated)	50	56	41	34	32	43		Institutional Research
D. Annual FTE Enrollment <b>PI</b>	50	53	39	33	30	41		Institutional Research
E. Annual Program Capacity	125%	140%	103%	85%	80%	107%		Institutional Research
F. Fall to Fall Retention Rates (Full-time students) <b>PI</b>	67%	70%	92%	64%	82%	75%	Fall 2013-2017 Cohorts	Institutional Research
G. Fall to Fall Retention Rates (Part-time students) <b>PI</b>	N/A	N/A	0%	N/A	0%	0%	Fall 2013-2017 Cohorts	Institutional Research
H. Program Course Completion Rate (C- or better)	100%	93%	90%	91%	97%	94%	Fall+Spring Semester/2	Institutional Research
I. 150% Time Graduation Rate (Full-time students)	70%	92%	53%	50%	77%	68%	Fall 2011-2015 Cohorts	Institutional Research
J. 150% Time Graduation Rate (Part-time students)	0	67%	N/A	N/A	0	22%	Fall 2011-2015 Cohorts	Institutional Research
K. Annual Degree & Certificate Completions	15	15	13	15	9	13		Institutional Research
L. Degree Production Rates – proportion of degrees/certificates granted per 100 FTE <b>PI</b>	30	28	33	46	31	34		Institutional Research
M. Pass Rates on Occupation/Industry Specific Licensing or Certification Exams (as applicable) <b>PI</b>								

KPI or PI Denotes Items that are Core Theme Indicators for Helena College  
 Key Performance Indicator or Performance Indicator for Program Quality and/or Effectiveness under Strategic Enrollment Planning/Management



Diesel Technology 2013-2018								
Program Review Data Summary								
Alignment with Community Needs (CTE Only)								
Data Definition:	Current MT	Projected MT	Current U.S.	Projected U.S.			Program Notes	Source
A. Provide the total number of projected job openings from related occupations for Montana and the U.S.	1,265	1,367	278,800	304,600			Projected annual openings MT: 126 Projected annual openings US: 28,200	Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections) <a href="http://lmi.mt.gov/Projections">http://lmi.mt.gov/Projections</a>
B. Provide percent change in job openings for related occupations for Montana and the U.S.		+8%		9%				Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections)
C. Provide the median hourly wage or annual salary for related occupations	\$48,490		\$46,360				Starting Salary Range (2013-2017): \$27,047 - \$38,592	Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections)
Data Definition:	AY1213	AY1314	AY1415	AY1516	AY1617	5 Year Ave	Program Notes	Source
D. Provide 5 years of job placement rates for all program graduates PI	73%	93%	100%	77%	93%	87%	% of graduates employed for at least 1 quarter following graduation	OCHÉ & Bureau of Labor Statistics <a href="https://www.mus.edu/data/WorkforceTool/default.asp">https://www.mus.edu/data/WorkforceTool/default.asp</a> <a href="https://www.careeronestop.org/toolkit/careers/occupations/Occupation-profile.aspx?keyword=Automotive+Master+Mechanics&amp;onetcode=49302301&amp;location=UNITED+STATES">https://www.careeronestop.org/toolkit/careers/occupations/Occupation-profile.aspx?keyword=Automotive+Master+Mechanics&amp;onetcode=49302301&amp;location=UNITED STATES</a>
E. For applied programs with program admission provide five years of student application totals	N/A	N/A	N/A	N/A	N/A	N/A		
F. For applied programs with program admission provide five years of students accepted totals	N/A	N/A	N/A	N/A	N/A	N/A		
Denotes items that are Core Theme Indicators for Helena College								
KPI or PI Key Performance Indicator or Performance Indicator for Program Effectiveness under Strategic Enrollment Planning/Management								