Montana University System

PROGRAM REVIEW

Institution: **Montana State University - Northern**

Program Years: **2015-16**

List of the programs reviewed:

- AA General Education
- BA Liberal Studies
- Diesel Technology
    - Certificate of Applied Science Diesel Technology
    - Associate of Applied Science Diesel Technology
    - Bachelor of Science Diesel Technology
    - Bachelor of Science Diesel Technology – Field Maintenance option
    - Bachelor of Science Diesel Technology – Equipment Management option
    - Minor Diesel Technology
- Computer Information Systems Minor
- Agricultural Mechanics Technology
    - AAS Agricultural Mechanics Technology
    - Minor Agricultural Mechanics Technology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

See attached detailed individual Program review summaries.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

See attached detailed individual Program review summaries.

Montana University System

PROGRAM REVIEW

Institution: **Montana State University - Northern**

Program Years: **2009-20016**

List of the programs reviewed:

A.A. in General Education

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

Retain

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

	09-10	10-11	11-12	12-13	13-14	14-15	15-16
General Education graduates	10	0	4	5	3	5	4
General Education majors	37	36	81	48	34	55	54

The Associate of Arts in General Education allows a student to complete an associate degree while fulfilling all the general education requirements that can subsequently be used for a baccalaureate degree at any university. In addition, they can start taking additional classes to investigate potential majors they may be interested in. This degree program is offered face-to-face and online.

Montana University System

PROGRAM REVIEW

Institution: **Montana State University - Northern**

Program Years: **2009-2016**

List of the programs reviewed:

B.A. in Liberal Studies

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

Retain.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

	09-10	10-11	11-12	12-13	13-14	14-15	15-16
Liberal studies graduates	7	4	7	2	4	1	0
Liberal studies majors	42	26	23	26	23	11	11

Description of the Liberal Studies program: The bachelor of Arts degree in Liberal Studies is designed to provide the student with a flexible liberal education that emphasizes the humanities and social sciences. This program permits the student to work in a combination of disciplines. This background provides a foundation for understanding the ideas that shape our society and leads to awareness of a variety of social, cultural and historical issues that are nessary for the successful advancement in today's society. The program permits the student to complete advanced work in two areas of liberal study with options in the humanities and social sciences. The Liberal Studies program prepares students for career opportunities in the arts, writing, public relations or the social service area. It also provides an excellent background for students considering graduate study in the arts, humanities and social sciences or in professional fields such as law.

Significant changes to the program: There have been no significant changes to the program in the last 7 years.

Analysis and Appraisal: The Liberal Studies program provides a liberal arts degree program for students served by MSU-Northern. It allows these students to get the academic background prior to moving on for graduate study. The core of the program utilizes classes from social science, community services, history, political science, psychology, and English thus preparing a student to be successful in any career path they choose.

Montana University System

PROGRAM REVIEW

Institution: **Montana State University Northern**

Program Years: **2009 - 2016**

List of the programs reviewed:

- Certificate of Applied Science Diesel Technology
- Associate of Applied Science Diesel Technology
- Bachelor of Science Diesel Technology
- Bachelor of Science Diesel Technology – Field Maintenance option
- Bachelor of Science Diesel Technology – Equipment Management option
- Minor Diesel Technology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

Recommendation is to GROW all degree areas, and minor in Diesel Technology.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

Brief History

The diesel technology program has grown from small beginnings to one of the major programs on the MSU Northern campus. Two major additions to the degree offerings have occurred since the last review – the Equipment Management option within the B.S. degree, and most recently the Certificate of Applied Science. MSU Northern is one of a limited number of university colleges offering a 4-year degree in Diesel Technology. The Diesel Technology programs offer a unique, hands-on technology education recognized by industry leaders as one of the nation's leading Diesel Technology programs. The academic programs are designed as a pathway to allow students to advance from one to another without losing credits or repeating courses.

The diesel program is offering and expanding long-distance delivery of lectures via Interactive TV (Polycom). This supports the OCHE initiative to incorporate course sharing with smaller campuses to more effectively use the resources at MSU Northern. Local resident faculty will deliver on-site labs in conjunction with the lectures.

Enrollment and Graduation Numbers

Data provided by the MSU Northern Institutional Research office (Tables 1 & 2) shows the graduation and enrollment numbers over the past 9 years for the different program degree areas. The numbers show a steady increase in both the students enrolled and the graduation numbers. Note: the C.A.S. degree launch year was 2016 so there are no enrollment numbers or graduation numbers shown. The Equipment Management option began 2012, so there are no enrolment or graduation numbers until that year. Prior years in both cases are reflected by N/A in Tables 1 & 2.

Graduates in the various diesel degrees has consistently attained Departmental Distinction, and Latin Honors at graduation – as shown in Table 3. This shows the very high level of education, learning, integrity and overall quality of the diesel program, students and faculty.

Enrollment by Major	200930	200950	200970	201030	201050	201070	201130	201150	201170	201230	201250	201270	201330	201350	201370	201430	201450	201470	201530	201550	201570	20163
Diesel Tech: Equipment Mgmt B.S.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	7	5	9	8	4	9	8	5	11	
Diesel Technology - A.A.S.	24	7	28	22	7	41	49	11	58	55	21	58	41	11	50	41	10	66	49	9	85	3
Diesel Technology: B.S.	55	20	80	68	29	86	85	36	91	93	41	105	102	43	120	110	40	97	87	34	87	7
Diesel Technology - C.A.S.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Diesel Technology: Field Maint B.S.	8	3	8	8	2	7	7	0	4	4	2	9	10	3	12	12	5	12	9	2	3	
Diesel Technology - MINOR	2	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	

TABLE 1: Enrolment numbers Fall (for all diesel degrees and minor)

	2009	2010	2011	2012	2013	2014	2015	2016
Diesel Tech: Equipment Mgmt	N/A	N/A	N/A	N/A	N/A	5	2	7
Diesel Technology - A.A.S.	6	6	10	7	12	9	13	26
Diesel Technology: B.S.	24	19	22	23	17	30	29	19
Diesel Technology: Field Maint B.S.	0	5	5	0	3	4	7	3
Total Dies Grads	30	30	37	30	32	48	51	55

TABLE 2: Graduation Numbers

	Diesel Honors				
	Departmental Distintion	Cum Laude	Magna Cum Laude	Total Honors	% Total Grads with Honors
2009	9	8		17	57
2010	6	3	1	10	33
2011	14	10	1	25	68
2012	11	6	5	22	73
2013	9	5	1	15	47
2014	13	9	6	28	58
2015	18	5	10	33	65
2016	18	6	7	31	56

TABLE 3: Students earning Departmental Distinction, Cum Laude, and Magna Cum laude

Industry Partnerships

The program has numerous industry partners, from local, state, regional, and national companies. These include partners in construction equipment, agricultural equipment, mining, marine, on highway transportation, and others. Program faculty and MSU Northern administration has worked with the industry partners to secure donations (financial, equipment, training aids, etc.) and also to develop placement of cooperative education placements and placements of graduates.

The dynamic partnerships that MSU Northern has cultivated with the private sector have driven the Diesel Technology program to craft a set of truly unique educational opportunities for students and prospective employees for our business partners.

Advisory Board

The MSU Northern Diesel program has a very engaged advisory board that meets biennially during the school year (one fall and one spring meeting). The board consists of industry dealers, corporate CEOs, and leaders representing manufacturers, both domestic and foreign. The board has made numerous suggestions and initiatives that have been implemented which have benefited the Diesel program. The board has also been instrumental in recruiting efforts by implementing interactive online videos and hosting on campus events for future students. The board is very active in articulation/transfer of community college graduates and recruiting efforts throughout the Pacific Northwest and beyond for the Diesel Technology Programs. Members of the board and other employers are very active in our Diesel Cooperative Education program. Traditionally employers make an on campus recruiting visit early fall for CO-OP and fall or spring graduates. Employers continue their recruiting effort through late spring semester. The advisory board works with faculty regarding curriculum changes and course changes that will ensure that the diesel curriculum will be current and utilize state of the art equipment.

Ties to University Mission Statement and Core Themes

MSU Northern Mission Statement: *"MSU Northern provides higher education to students for professional and technical careers through an institution dedicated to teaching and the pursuit of knowledge"*. The diesel technology programs are tied directly to the Mission statement as all the degrees and the minor are technical in nature, leading to technical careers for the graduates. Ties to the Mission statement are further evidenced by the approved industry technical and professional training that the faculty has. This technical and professional training is brought directly into the lecture room and the hands-on labs, benefiting the students.

Core Theme 1: *"Provide liberal arts, professional and technical programs that serve a diverse student population"* is evidenced by our placement and success rates of the highly qualified graduates. This core value is also met with student participation in the MSU Northern SkillsUSA chapter, and State and National SkillsUSA competitions

Core Theme 2: *"Promote student centered and culturally enriched environment which fosters student success"* is evidenced with the requirements that our students will study history, social sciences, humanities and cultural diversity as part of their General Education requirements. Core Theme 2 is also met by the fact that the diesel industry is constantly changing, thus the students become life-long learners by virtue of participating in this industry.

Core Theme 3: *"Partner with external entities to enhance and expand learning experiences"* is evidenced with the requirement of the students to complete 1 or more cooperative education credits as part of the graduation requirements. All co-ops are completed with external industry partners. Further evidence is the close working relationship with our industry partners who provide scholarship funds, loan equipment, donate equipment, guest lecturers, Diesel Advisory Board, judges at the MT State SkillsUSA conference, recruiting efforts, TekNoXpo participants & help, to name a few.

Articulation Agreements, Recruiting

The diesel program has formalized 10 articulation agreements for graduates of 2 year diesel technology programs, with another 5 in the process of being finalized. These agreements allow seamless transfer for these graduates into our 4 year degree graduates.

Industry partners are available to assist MSU Northern recruiters at high schools and colleges in their regions. This leads to focused target recruiting for the diesel program area. Faculty routinely

meet with prospect students and parents who are visiting to campus to look at the diesel program as a choice for their higher education degree. This action leads to a personal one-on-one meeting that significantly influences the decision of the student to attend MSU Northern.

Faculty

The program currently has 3 ½ faculty dedicated to diesel courses only, with several other faculty teaching diesel/automotive courses, and one teaching diesel/agricultural mechanics. All faculty members have related industry experience and training relating to their teaching fields. All faculty also hold undergraduate degrees in the diesel field or related fields, several also hold their Masters degrees, and several are pursuing their Masters degrees. One faculty member also holds professional membership in SAE (Society of Automotive Engineers), and several are ASE certified.

Cooperative Education

The Diesel Program utilizes a formal Cooperative Education program which collaborates with industry partners to prepare students and strengthen graduates, to excel in the fields of Diesel technology. As a result, the Diesel Program receives industry support and critical feedback. The cooperative education requirement provides real world, hands on experience to strengthen the fundamentals learned while enrolled in their course work at MSU Northern.

Career Center: Fall 2009 through summer 2016 - 397 Diesel/Ag Mechanics students completed their cooperative education credits for a total of 1690 credits. This number includes fall, spring and summer co-ops.

New Diesel Technology Center (DTC) building

The mission of the Diesel Technology Center (DTC) is to provide a superior technically enhanced educational facility for inter-disciplinary learning in technical fields which focuses and enhances industry outreach efforts.

The DTC will serve as a campus, regional and national technical education resource hub utilizing the most modern education and learning technologies. The facility will be a regional dynamic technical education hub designed and equipped to deliver unique technical education, and will aid in stimulating and revitalizing local, regional and national economic development efforts. The DTC will also help provide Montana and the region with a technologically competent and well-trained work force.

Modern communication and visual education technologies, incorporated into the building's design, will allow for an expanded technical education outreach program. The facility will also allow the institution to better network with industry and businesses. Large industrial education bays will provide a wonderful resource for updating and re-training employees.

Challenges

As Tables 1 & 2 clearly show, the program is growing. This means that there is an increasing demand for extra course offerings and lab sections. Parallel to the growth is extra demand on the current faculty and current resources. These two facts lead to two major challenges – attracting and retaining qualified faculty; and, procuring the needed equipment, training aids, and other resources to maintain the ever-increasing number of students.

An analysis of current credit loads for the faculty involved with the diesel program shows that ALL faculty are in overload (Table 4). A full credit load for a full-time faculty person is considered

24 credits per academic year. Based on data from previous semesters, we are projecting a total of 27 credits of overload – this is more than one full-time faculty position. This does not include the potential of offering more lecture and or lab sections to cover the increased enrollment. The numbers more than justify another full-time faculty position.

	Fall 14	Spring 15	Credits AY14-15	Overload credits	Fall 15	Spring 16	Credits AY15-16	Overload credits	Fall 16	Spring 17 (based on SP16)	Credits AY16-17	Overload credits
Wane Boysun	10	14	24	0	10	14	24	0	14	14	28	4
Greg Clouse	15	11	26	2	15	11	26	2	15	11	26	2
Steven Don (1/2 time faculty)	6	6	12	0	6	6	12	0	6	8	14	2
Jeremy Hofman	13	15	28	4	14	12	26	2	14	12	26	2
Kevin Holzworth	13	15	28	4	14	13	27	3	14	13	27	3
Josh Meyer	14	10	24	0	12	12	24	0	15	12	27	3
Kevin Ruby	17	11	28	4	14	13	27	3	14	13	27	3
William Taylor	15	13	28	4	15	13	28	4	15	13	28	4
Aaron Riggin (diesel program classes)						4	4		9	15	24	0
Randy Riggin SP15/FA15/SP16 Brandon Matson FA16/SP17	13	13	26	2	13	13	26	2	15	13	28	4
			TOTAL OL Credits	18			TOTAL OL Credits	16			TOTAL OL Credits	27

TABLE 4: Analysis of current credit loads and overload

Recommendations

Because of the increasing career opportunities and aging work force in this highly technical industry (locally, state-wide, regionally, nationally, globally) skilled technicians are in dire need. Graduates of the MSU Northern diesel program are typically offered multiple jobs for career choices. Undergraduate students are also typically offered multiple cooperative education opportunities which lead to increased student retention. Specialized technicians that possess a formal education, excellent work ethic, life-long learning skills, and the ability to adapt to change are in very short supply.

The overall recommendation is to GROW all the diesel technology areas.

With this recommendation, it is evident that there is an immediate need for added qualified faculty (full time or adjunct) and program resources are needed. The program faculty have recommended hiring several support positions. Specifically a Director of the Diesel Technology program, a professional advisor (for the COTS), a Recruiter/Industry Relations Specialist, and a full-time lab technician. These additions will allow a more efficient and effective utilization of current and future resources, and also the sustainability of the program.

A plan should be developed and implemented with the goal of increasing the number of program faculty as well as addressing the faculty request for administration, advising, industry relations, recruiting and lab management support.

The diesel faculty recognize that enrollment and graduation numbers are low in two areas: B.S. Diesel Technology: Field Maintenance option, and the Diesel Technology Minor. These two areas need to be evaluated and a concerted effort needs to take place to grow both (e.g. discussions with business and agricultural technology faculty to encourage more of their students to take diesel technology as their minor).

Faculty also realize that there needs to be a more concerted effort (from faculty, advising department, admissions, etc.) with regards to getting students into summer courses (DST and ATDI). This will aid in taking the stress of the already full fall and spring courses.

Montana University System

PROGRAM REVIEW

Institution: **Montana State University Northern**

Program Years: **2015-2016**

List of the programs reviewed:

Computer Information Systems Minor

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

This program was placed into moratorium in Fall of 2015.

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

MSU-Northern Academic Scorecard

STUDENTS **Goal: Increasing the number of students enrolling and graduating from Northern.**	
Measures	Benchmarks (Targeted Outcomes)
Number of majors and minors (if applicable) in the program for the last five years; a total for each year, and an average for the period - disaggregated by on- and off-campus (or location).	a. 3 year average of 52 and 26 majors/minors for undergraduate and graduate programs***** Average of 2 students.
Number of graduates from the program for the last five years; a total for each year, and an average for the period - disaggregated by on- and off-campus (or location).	b. 3 year average of 10 and 6 graduates from undergraduate and graduate programs***** Average of 2 students.
Semester-to-semester retention rate, by program, for the last three years, and an	c1. 70% retention rate***** c2. Number of incoming students sufficient to achieve (b) given the programs' retention

average for the period - disaggregated by on- and off-campus (or location).	rate (c1) and current number of majors/minors (a) [note: will vary by program]* **2 minors currently**

QUALITY **Goal: Increasing the quality of academic programs.**	
Measures	Benchmarks (Targeted Outcomes)
Professional or association standards, or other external measures of quality.	Program follows IS 2010 curriculum guide standards.
Quality of the faculty (e.g., publications, professional conferences or presentations, certifications, awards, service to professional associations, etc.). This measure will vary from program to program because of the broad range of programs offered at MSU-Northern.	ICCP Certification, two published papers
Employer and Advisory Committee satisfaction using survey information.	Advisory committee satisfied at last meeting held.
Student satisfaction using survey information and other appropriate measures (e.g., exit interviews of students upon graduation, focus groups, etc.).	n/a

INNOVATION and UNIQUENESS **Goal: Increasing the ways in which Northern's academic programs are innovative and unique.**	
Measures	Benchmarks (Targeted Outcomes)
What is unusual or different about the degree program, when compared to institutions that compete with MSU-Northern?	This program is a combination of theory and application which is not found elsewhere.

What is innovative about the degree program in the way it delivers its coursework, serves its students, creates career opportunities for students, or develops its curriculum?	Many courses are designed to be delivered Dual enrollment with faculty certified in secondary computer science by MT OPI.

PLACEMENT and INDUSTRY DEMAND
Goal: Increasing Northern's responsiveness to industry demands and the rate at which Northern's students are placed in related employment.

Measures	Benchmarks (Targeted Outcomes)
Placement rates for students in their career field, and number of graduates going on for additional education, for each of the last five years.	n/a for minor
Industry demand and forecasts for program graduates.	**National estimates for this occupation:** Top Employment estimate and mean wage estimates for this occupation:

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
341,250	1.0 %	$67.79	$141,000	0.5 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	$38.54	$48.98	$63.27	$79.88	(5)
Annual Wage (2)	$80,160	$101,880	$131,600	$166,160	(5)

Relationships with industry (e.g., formal partnerships or initiatives with industry, student work experiences, donations, etc.).	n/a for minor

RESOURCES **Goal: Increasing the efficient and effective use of academic resources.**	
Measures	Benchmarks (Targeted Outcomes)
Resources committed to program, using two measures: ratio of program dollars to state allocated dollars; average cost of educating a student in the program; information reported for each of the last three years - disaggregated by on- and off-campus (or location).	
FTES by program for each of the last three years, and an average FTES for the period; student credit hours, by program, for each of the last 3 years, and an average for the period - disaggregated by on- and off-campus (or location).	

RELATIONSHIP TO MISSION **Goal: Increasing the alignment of academic programs with Northern's Mission and Educational Master Plan.**	
Measures	Benchmarks (Targeted Outcomes)
How the program addresses Northern's mission statement.	Computer information systems is a standard “technical career” and accepted positive extension for all majors at MSUN.
How the program meets the core educational values of MSU-Northern (to be completed).	
How the program addresses the Key Assumptions and Principles to Guide Educational Planning and Programming at MSU-Northern.	CIS has an advisory board. CIS professors maintain certifications and updated knowledge base.

Montana University System

PROGRAM REVIEW

Institution: **Montana State University-Northern**

Program Years: **2009-2016**

List of the programs reviewed:

- Associate of Applied Science Agricultural Mechanics Technology
- Minor Agricultural Mechanics Technology

Decision(s) concerning the future of the program(s), based on the program review criteria established at the campus:

Recommendation to grow AAS as well as Minor

Rationale or justification for the decision based on the program review process established at the campus. Include graduation numbers and student majors for each of the last seven (7) years for every program under review.

History

The Agricultural Mechanics Technology Program was started to provide competent technicians to aid the #1 industry in the state. The Ag Mechanics is one of five programs of its kind in the nation, being one of three in the western U.S. The program and students are highly regarded by top industry leaders both nationwide and internationally.

The Program is very close knit with the Diesel Technology program and allows students to attain dual majors with ease.

Enrollment and Graduation Numbers

Data provided by the MSU Northern Institutional Research office (Tables 1 & 2) shows the graduation and enrollment numbers over the past 9 years for the different program degree areas. The numbers show a steady increase in both the students enrolled and the graduation numbers.

Enrollment by Major	Code	Enllmnt Avg.	200930	200950	200970	201030	201050	201070	201130	201150	201170	201230	201250	201270	201330	201350	201370	201430	201450	201470	201530	201550	201570	2016
Agricultural Mechanics Tech	A06	6.59	0	0	1	2	0	7	6	0	9	10	2	12	12	2	12	11	2	10	12	4	16	

TABLE 1: Enrollment Numbers

	2009	2010	2011	2012	2013	2014	2015	2016
Agricultural Mechanics Tech	2	4	6	3	5	10	6	15
Ag. Mechanics Technology Minor	0	2	1	1	2	6	2	1

TABLE 2: Graduation Numbers

	Ag. Mech Honors		
	Departmental Distintion	Cum Laude	Magna Cum Laude
2009	1	1	
2010	1		
2011	2	2	
2012		2	
2013	2	1	1
2014	6	4	1
2015	2	2	1
2016	7	3	2

TABLE 3: Graduating Ag. Mechanics Students receiving Departmental Distinction and Latin Honors

Industry Support

The program has multiple industry partners from local companies, as well as across the state and nation. The program faculty and administration have worked very closely with industry partners to secure donations and develop a cooperative education placements, as well as placements for graduates. Donations secured include monetary funds for buildings, program equipment. The local dealers have loaned almost 3 million dollars of the most technologically advanced agricultural equipment to the program for use during the academic year.

Advisory Board

The MSU-Northern Agricultural Mechanics program has a very engaged advisory board that meets biennially during the school year (one fall and one spring meeting) in conjunction with the Diesel Technology Advisory board. The board consists of industry dealers, corporate CEOs, and leaders representing manufacturers, both domestic and foreign. The board has made numerous suggestions and initiatives that have been implemented which have benefited the Ag. Mechanics program. The board has also been instrumental in recruiting efforts by implementing interactive online videos and hosting on campus events for future students. The board is very active in articulation/transfer of community college graduates and recruiting efforts throughout the Pacific Northwest, Canada, and other states for the Ag. Mechanics Program. Members of the board and other employers are very active in our Ag. Mechanics Cooperative Education program. Traditionally employers make an on campus recruiting visit early fall for Co-op and fall or spring graduates. Employers continue their recruiting effort through late spring semester. The advisory board works with faculty regarding curriculum changes and course changes that will ensure that the Ag. Mechanics curriculum will be current and utilize state of the art equipment.

Ties to University Mission Statement and Core Themes

MSU Northern Mission Statement: *"MSU Northern provides higher education to students for professional and technical careers through an institution dedicated to teaching and the pursuit of knowledge"*. The Ag. Mechanics technology programs are tied directly to the Mission statement as all the degree and the minor are technical in nature, leading to technical careers for the graduates. Ties to the Mission statement are further evidenced by the approved industry technical and professional training that the faculty has. This training is brought directly into the lecture room and the hands-on labs, benefiting the students.

Core Theme 1 is evidenced by our placement and success rates of the highly qualified graduates. This core value is also met with student participation in the MSU Northern SkillsUSA chapter, and State and National SkillsUSA competitions

Core Theme 2 is evidenced with the requirements that our students will study history, social sciences, humanities and cultural diversity as part of their General Education requirements. Core Theme 2 is also met by the fact that the Ag. Mechanics industry is constantly changing, thus the students become life-long learners by virtue of participating in this industry.

Core Theme 3: *"Partner with external entities to enhance and expand learning experiences"* is evidenced with the requirement of the students to complete 1 or more cooperative education credits as part of the graduation requirements. All coops are completed with external industry partners. Further evidence is the close working relationship with our industry partners who provide scholarship funds, loan equipment, donate equipment, guest lecturers, Diesel Advisory Board, etc.

Faculty

The program currently has 1 faculty that specializes in the Ag. Mechanics courses, and also teaches in the diesel program. Several faculty members teach courses that are utilized in other program areas including the Ag. Mechanics (e.g. diesel engines, Heating & A/C, hydraulics, etc.). All faculty members have related industry experience and training relating to their teaching fields. All faculty also hold undergraduate degrees in the Ag. Mechanics field or related fields, several also hold their Masters degrees, and several are pursuing their Masters degrees. One faculty member also holds professional membership in SAE (Society of Automotive Engineers), and several are ASE certified.

Cooperative Education

The Ag. Mechanics program does not require but utilizes the formal Cooperative Education program. This program collaborates with industry partners to prepare students and strengthen graduates, to excel in the fields of Ag. Mechanics technology. As a result, the Ag. Mechanics Program receives industry support and critical feedback. The cooperative education requirement provides real world, hands on experience to strengthen the fundamentals learned while enrolled in their course work at MSU-Northern.

Career Center: Fall 2009 through summer 2016 - 397 Diesel/Ag Mechanics students completed their cooperative education credits for a total of 1690 credits. This number includes fall, spring and summer co-ops.

New Diesel Technology Center (DTC) building

The mission of the Diesel Technology Center (DTC) is to provide a superior technically enhanced educational facility for inter-disciplinary learning in technical fields which focuses and enhances industry outreach efforts. The Agricultural Mechanics program works extremely closely with the Diesel Technology program.

The DTC will serve as a campus, regional and national technical education resource hub utilizing the most modern education and learning technologies. The facility will be a regional dynamic technical education hub designed and equipped to deliver unique technical education, and will aid in stimulating and revitalizing local, regional and national economic development efforts. The DTC will also help provide Montana and the region with a technologically competent and well-trained work force.

Modern communication and visual education technologies, incorporated into the building's design, will allow for an expanded technical education outreach program. The facility will also allow the institution to better network with industry and businesses. Large industrial education bays will provide a wonderful resource for updating and re-training employees.

Challenges:

As tables 1 & 2 clearly show, the program is growing. This means that there is an increasing demand for extra course offerings and lab sections. Parallel to this will be extra demand on the current faculty and current resources. These two facts lead to two major challenges – attracting and retaining qualified faculty; and, procuring the needed equipment, training aids, and other resources to maintain the ever-increasing number of students. As stated above, students can couple the Ag. Mechanics program with the Diesel Technology program, thus the effects of increasing student numbers is amplified.

An analysis of current credit loads for the faculty involved with the agricultural mechanics program shows that ALL faculty are in overload (Table 4). All of the faculty teach students that are in the Ag. Mech. program, although the faculty are not strictly teaching Ag. Mech. courses. A full credit load for a full-time faculty person is considered 24 credits per academic year. Based on data from previous semesters, we are projecting a total of 27 credits of overload – this is more than one full-time faculty position. This does not include the potential of offering more lecture and or lab sections to cover the increased enrollment. The numbers more than justify another full-time faculty position who would be teaching courses in both the Ag. Mech. and Diesel programs.

	Fall 14	Spring 15	Credits AY14-15	Overload credits	Fall 15	Spring 16	Credits AY15-16	Overload credits	Fall 16	Spring 17 (based on SP16)	Credits AY16-17	Overload credits
Wane Boysun	10	14	24	0	10	14	24	0	14	14	28	4
Greg Clouse	15	11	26	2	15	11	26	2	15	11	26	2
Steven Don (1/2 time faculty)	6	6	12	0	6	6	12	0	6	8	14	2
Jeremy Hofman	13	15	28	4	14	12	26	2	14	12	26	2
Kevin Holzworth	13	15	28	4	14	13	27	3	14	13	27	3
Josh Meyer	14	10	24	0	12	12	24	0	15	12	27	3
Kevin Ruby	17	11	28	4	14	13	27	3	14	13	27	3
William Taylor	15	13	28	4	15	13	28	4	15	13	28	4
Aaron Riggin (diesel program classes)						4	4		9	15	24	0
Randy Riggin SP15/FA15/SP16 Brandon Matson FA16/SP17	13	13	26	2	13	13	26	2	15	13	28	4
			TOTAL OL Credits	18			TOTAL OL Credits	16			TOTAL OL Credits	27

Recommendations

Because of the increasing career opportunities and aging work force in this highly technical industry (locally, state-wide, regionally, nationally, globally) skilled technicians are in dire need. Graduates of the MSU Northern Ag. Mechanics program are typically offered multiple jobs for career choices. Undergraduate students are also typically offered multiple cooperative education opportunities which lead to increased student retention. Specialized technicians that possess a formal education, excellent work ethic, life-long learning skills, and the ability to adapt to change are in very short supply.

The overall recommendation is to GROW the Ag. Mechanics technology program.

With this recommendation, it is evident that there is an immediate need for added qualified faculty (full time or adjunct) and program resources are needed. The program faculty have recommended hiring several support positions. Specifically a Director of the Diesel Technology program, a professional advisor (for the COTS), a Recruiter/Industry Relations Specialist, and a full-time lab technician. These additions will allow a more efficient and effective utilization of current and future resources, and also the sustainability of the program. The Ag. Mechanics program is tied very closely to the Diesel Technology program, so the needs are the same for both.

A plan should be developed and implemented in conjunction with the Diesel Technology program with the goal of increasing the number of program faculty as well as addressing the faculty request for administration, advising, industry relations, recruiting and lab management support.

The agricultural mechanics faculty also recognizes that enrollment and graduation numbers are low in the Ag. Mechanics Technology Minor. This area needs to be evaluated and a concerted effort needs to take place to grow both the enrollment and graduation numbers (e.g. discussions with business and agricultural technology faculty to encourage more of their students to take ag. mechanics technology as their minor).