Advanced Technology Division – FY 2007

Assessment Plan: Diesel Program

Advanced Technology Division

Assessment Framework

1) Achieve the Learning Outcomes - Program learning outcomes identify the skills and knowledge students will have when they complete the program and enter the workforce. The faculty have implemented a learning outcomes assessment process to analyze the discrepancies between the planned performance indicators and the actual performance of the student program completers.

2) Achieve the Operating Outcomes - Program operating outcomes identify the desired operating performance indicators for program effectiveness and efficiency. The division has established a set of operating benchmarks and trend indicators for this program. These indicators include analyses for enrollments, retention, success, diversity, staffing ratios, and cost ratios. The faculty have implemented a program operating outcomes assessment process to analyze the discrepancies between the planned program operating performance indicators and the actual operating performance.

3) Maintain the Learning Environment. The program should continuously maintain, upgrade and improve its existing human, curriculum, equipment, software, and facility resources. Staff and curriculum need to maintain currency and relevance to the changes in the discipline, technology and the workforce. The existing equipment inventory has a defined annual life cycle cost to maintain. The status of the program's equipment inventory is reviewed. Obsolete, inoperable, unsafe or ineffective equipment is identified for replacement.

4) Enhance the Learning Environment. The program should enhance its learning environment to appropriately respond to new opportunities and challenges. The program should acquire and incorporate new human, curriculum, equipment, software and facility resources to continuously improve its efficiency and effectiveness.

Learning Outcomes

Program Learning Outcomes	Performance Indicators
1) Demonstrate employability skills required for initial employment and advancement in the industry that include: attendance, proper attire, customer relations, following directions, working in teams, and understanding work rules and ethics. This program will implement the division's employability skills assessment process. *(refer to appendix A).*	70% of the students will initiate a performance review after completing 30 credits in the program. Of these students, 90% will be promoted to and exit with the "entry level employee" status.
2) Demonstrate safe work practices and tool usage while performing operations in a shop environment.	90% of all students will pass a safety written and demonstration test.

3) Demonstrate technical skills and knowledge to pass the certification exams in nine areas of Automotive Service Excellence Standards: Diesel Engines; Drive Trains; Brakes; Suspension and Steering; Electrical/Electronic Systems; Heating, Ventilation and Air Conditioning; Preventative Maintenance Inspection; Auxiliary Power System; and, Truck Equipment.	90% of the students who complete the program will have gained the necessary competencies to pass the ASE certification examinations.
4) Demonstrate industry troubleshooting procedures to diagnose and repair heavy duty equipment hydraulic systems.	90% of the students who complete the program will pass an industry certification examination.
5) Perform computations for gear ratios, engine displacement, electrical circuits, hydraulic circuits, power output, vehicle alignment angles, conversion between metric and standard measures, and use of precision measuring instruments and tools.	90% of the program completers will pass a final program computations examination with a 70% or better score.
6) Demonstrate technical abilities in researching, accessing and interpreting written, computer program or web-based reference materials for construction and carpentry.	All students will conduct research with citations in a written report in both the first and second year of the program.

Operating Outcomes

Program Operating Outcomes	Performance Indicators
1) Students will have access to the program.	The program will achieve a 26:1 student FTE to faculty FTE ratio.
2) The program will be cost effective.	The program's cost per student FTE will equal or be less than the division's projected benchmarks for a medium cost program. The prior year's actual expenses and earned student FTE will be compared to the division's operating benchmarks.
3) Students who declare their major in this program will increase as a percentage of the total students enrolled.	The percentage of declared majors will increase from year to year until 90% of the enrolled students are declared majors.
4) Program graduates will increase as a percentage of the total students enrolled.	70% of the students who completed 30 credits will graduate within 3 years.
5) The percentage of enrolled female students will increase.	The percentage of females will increase from year to year until the percentage exceeds the division's average.
6) The percentage of enrolled non-Caucasian program students will increase.	The percentage of non-Caucasian will increase from year to year until the percentage exceeds the division's average.
7) Students will complete the term.	The percentage of program students who complete each term will exceed the college completion rate.
8) Students will be successful in their progress through the program.	The percentage of program term completers who receive a C- or greater will exceed the college "success" rate.
9) Student will complete the program.	90% of the students who complete 30 program credits will either graduate or enter a job related to the program within two years.
10) Student completers will be asked to evaluate their overall satisfaction with the program training.	95% of the students who complete the diesel technology program will express satisfaction with the level of training provided.
11) Employers will be satisfied with the job	90% of employers will express job performance

performance of the prior year's program completers.	satisfaction with the program's student completers. On a five point scale, satisfaction is greater than the midpoint.

Maintain the Learning Environment

Maintain the Learning Environment	Performance Indicators
1) The program should continuously maintain, upgrade and improve its existing human, curriculum, equipment, software, and facility resources.	The faculty, advisory committee and manager will conduct an annual assessment of the program's learning environment using the unit planning process.
2) Staff and curriculum need to maintain currency and relevance to the changes in the discipline, technology and the workforce.	Specific staffing and curriculum maintenance needs will be identified and published in the unit plan.
3) The existing equipment inventory has a defined annual life cycle cost to maintain. The status of the program's equipment inventory will be reviewed. Obsolete, inoperable, unsafe or ineffective equipment will be identified for replacement.	The faculty will maintain an equipment inventory with a planned replacement schedule. Equipment needs will be identified and published in the unit plan.

Enhance the Learning Environment

Enhance the Learning Environment	Performance Indicators
1) The program should enhance its learning environment to appropriately respond to new opportunities and challenges. The program should acquire and incorporate new human, curriculum, equipment, software and facility resources to continuously improve its efficiency and effectiveness.	Initiatives will be identified through the unit planning process. Line items will be funded and implemented at a sufficient level to maintain the quality of the program.

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Program Learning Outcomes Assessment Matrix

Diesel Technology	DS 155 Heavy Equipment Hydraulics	DS 154 Heavy Duty Braking Systems	DS 158 Chassis & Power Trains	DS 256 Diesel & Auxiliary Fuel Systems	DS 257 Diesel Electrical Systems	DS 259 Diesel Engines and Overhauls	DS 280 Cooperative Education (suggested)	WLD 121 Shielded Metal Arc Welding	WLD 143 Wire Drive Welding 1	WLD 122 SMAW 2 or MFG 197 Manufacturing	Arts and Letters	CS 120 Concepts of Computing	HE 125 Workplace Safety *	Human Relations	MTH 076 Applied Geometry for Technicians	MTH 086 Applied Algebra for Technicians	WR 115W Introduction to College Writing
Associate Degree Credit Hours (108 Total Credits)	12	12	12	12	12	12		4	4	4	3	4	3	3	4	4	3
Two-year Certificate Credit Hours (97 Total Credits)	12	12	12	12	12	12		4	4	4	3		3		4		3
Program Learning Outcomes																	
Demonstrate employability skills required for initial employment and advancement in the industry that include: attendance, proper attire, customer relations, following directions, working in teams, and understanding work rules and ethics.	P	P	P	P	P	P	P	P	P	P		S	P	S			
Demonstrate safe work practices and tool usage while performing operations in a shop environment.	P	P	P	P	P	P	P	P	P	P			P				
Demonstrate technical skills and knowledge to pass the certification exams in nine areas of Automotive Service Excellence Standards: Diesel Engines; Drive Trains; Brakes; Suspension and Steering; Electrical/Electronic Systems; Heating, Ventiltion and Air Conditioning; Preventative Maintenance Inspection; Auxiliary Power System; and, Truck Equipment.	P	P	P	P	P	P	P	P	P	P		S	S		S	S	
Demonstrate industry troubleshooting procedures to diagnose and repair heavy duty equipment hydraulic systems.	P	P	P	P	P	P	P	P	P	P		S	S		S	S	
Perform computations for gear ratios, engine displacement, electrical circuits, hydraulic circuits, power output, vehicle alignment angles, conversion between metric and standard measures, and use of precision measuring instruments and tools.	P	P	P	P	P	P	P	P	P	P		S			P	P	
Demonstrate technical abilities in researching, accessing and interpreting written, computer program or web-based reference materials for diesel technology.	S	S	S	S	S	S	S	S	S	S	P	S		S			P
Core Abilities																	
Communicate effectively.	P	P	P	P	P	P	P	P	P	P							
Think critically and solve problems effectively.	P	P	P	P	P	P	P	P	P	P		P	P	P		P	P
Increase understanding of the relationship between self and community, including self-awareness and personal responsibility.	S	S	S	S	S	S	S	S	S	S			S	P			
Explore academic disciplines of liberal arts, social sciences, and physical sciences.											P	P	P	P	P	P	P
Learning College Principles																	
Learners are active partners in the learning process.	P	P	P	P	P	P	P	P	P								
Learners are self-directed.	P	P	P	P	P	P	P	P	P								
Multiple learning options for diverse learners.	P	P	P	P	P	P	P	P	P								
Learning is promoted across organizational boundaries.																	
Learning is substantive and documented.	P	P	P	P	P	P	P	P	P								
Assessment Methods																	
Technical Skill Performance Observation/Evaluation	P	P	P	P	P	P	P	P	P								
Employability Skills Evaluation	P	P	P	P	P	P	P	P	P								
Group Project	P	P	P	P	P	P											
Journaling	S	S	S	S	S	S											
Library Research	S	S	S	S	S	S											
Oral Report/Presentation	P	P	P	P	P	P											
Peer Assessment	S	S	S	S	S	S											
Portfolio	S	S	S	S	S	S											

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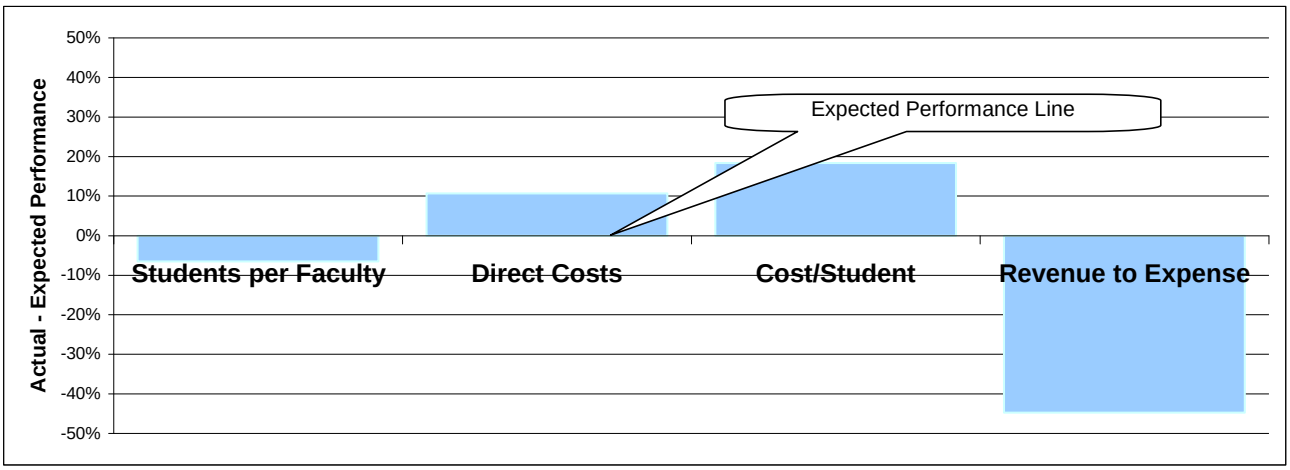
FY06 Assessment Evidence

Diesel Technology

	Fiscal Year 2006	Expected Model	Actual	Difference	IRAP	Analysis
1	**Enrollment**	**M**				**H**igh, **M**edium or **L**ow Cost Program
2	Reimbursable Student FTE	50.27	46.99		44.4	510 contact hours = 1 R-SFTE
3	Credit Hour Student FTE	32.00	29.91		29.9	45 Credit Hours = 1 CrdHr-SFTE
4	**Staffing**					
5	Full-time Equivalent Faculty	1.600	2.000	25%		Actual = Enrollment Reports FY06
6	Part-time Equivalent Faculty	0.400	0.000	-		Actual = Enrollment Reports FY06
7	**Total Faculty FTE**	**2.000**	**2.000**	**0%**		
8	**Budget**					
9	FT Faculty Dollars	98,002	122,347	25%		Actual = Banner FY06, Period 14
10	PT Faculty Dollars	15,925	-	-		Actual = Banner FY06, Period 14
11	Lab Assistant Dollars	8,000	12,942	62%		Actual = Banner FY06, Period 14
12	OPE	61,415	72,706	18%		Actual = Banner FY06, Period 14
13	Materials and Supplies	6,000	10,373	73%		Actual = Banner FY06, Period 14
14	Equipment	8,000	-	-		CARF $18,493 is not included
15	**Direct Instruction Costs**	**197,342**	**218,368**	**11%**	**188,090**	**Expenses are higher than expected.**
16	**Operating Ratios**					
17	R-SFTE/Total Faculty FTE	25.14	23.50	-7%		
18	**CrdHr-SFTE/Total Faculty FTE**	**16.00**	**14.96**	**-7%**		**Faculty are serving fewer students.**
19	Cost / R-SFTE	3,925	4,647	18%	4,240	
20	Cost / CrdHr-SFTE	6,167	7,301	18%		**Cost per student is higher than expected.**
21						
22	**Revenue**		**Revenue**	**Difference**	**IRAP**	
23	Tuition		88,833		89,439	FY06 Tuition Rate x CrdHr SFTE x 45
24	Program Fees (Differential)		-		-	Credit Hours x $27.92
25	Public Support / Reimb SFTE	3,765	176,936		113,258	TPS = $3,765 in Division; =$2,554 in IRAP
26	Other Instructional Revenue					
27	**Total Operating Revenue**		**265,768**		**202,697**	Contribution to Total College Revenue
28	Instructional Function Revenue	54.5%	144,844			Based on Model's Functional Cost Ratios
29	**Direct Instruction Revenue**	**83.3%**	**120,653**	**-45%**		**Expenses are Greater than Revenue**
30						Faculty, Lab Assts, M&S, Equip Costs
31	Indirect Instruction Revenue	16.7%	24,191			Portion of indirect instructional costs
32	Other Functions Revenue	45.5%	120,925			Student Svs, College Svs, etc.



The Diesel Technology program produced 7% less student FTE than planned. This created higher than expected direct costs and cost per student. According to the IRAP data, the program's revenue is less than its direct instructional expense. When considering only 54.5% of the total revenue is spent by the instructional function and 83.3% of that is spent on direct instruction, the program spent 45% more than it produced in total revenue. This is about 20% too high for a medium cost program.

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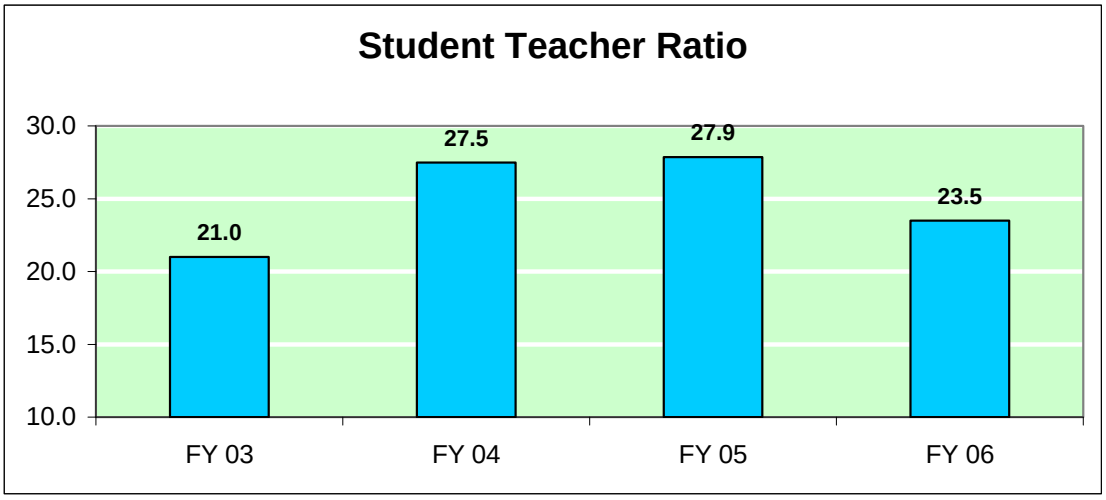
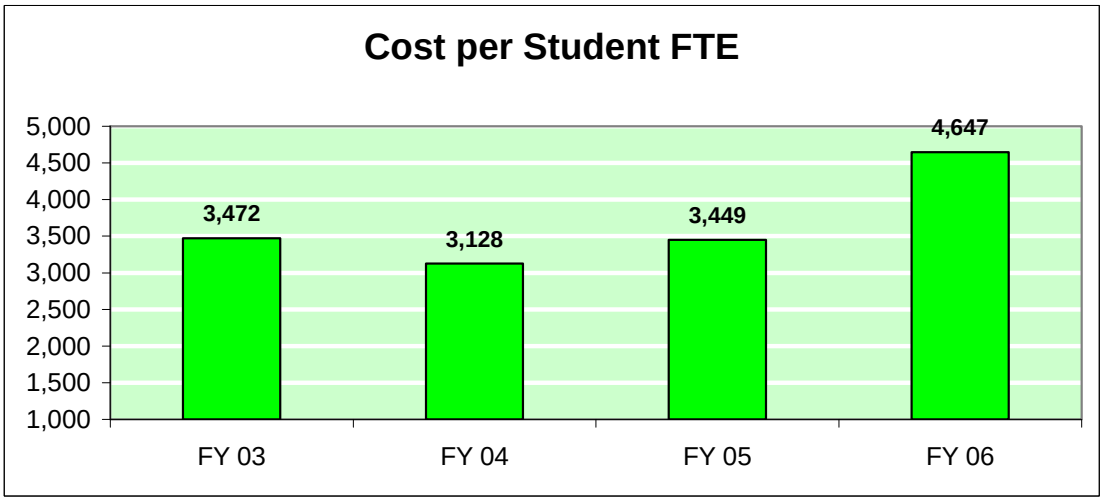
FY06 Assessment Evidence

Diesel Technology

	Operating Data	FY 03 Actual	FY 04 Actual	FY 05 Actual	FY 06 Actual
1	Full-Time Faculty FTE	2.000	2.000	2.000	2.000
2	Part-Time Faculty FTE	0.000	0.000	0.000	0.000
3	Total Faculty FTE	2.000	2.000	2.000	2.000
4	Student FTE	42.000	54.960	55.710	46.990
5	SFTE / FFTE	21.000	27.480	27.855	23.495
6					
7	Full-Time Faculty	104,928	108,381	114,648	122,347
8	Part-Time Faculty	0	208	78	0
9	Lab Assistant	0	0	8,231	12,942
10	Other Payroll Expenses	31,774	54,260	64,053	72,706
11	Materials and Supplies	9,129	9,046	5,106	10,373
12	Total	145,831	171,894	192,116	218,368
13	Cost per Student FTE	3,472	3,128	3,449	4,647





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FY06 Assessment Evidence

Advanced Technology Division - FY06 Student Success/Retention

Program	Enroll	Success	Complete	Withdraw	Completion Rate	Success Rate
AB	184	165	182	2	98.9%	89.7%
AT	218	203	215	3	98.6%	93.1%
AV	221	189	192	29	86.9%	85.5%
CT	277	270	271	6	97.8%	97.5%
DR	566	503	531	35	93.8%	88.9%
DS	108	101	108	-	100.0%	93.5%
ET	359	346	347	12	96.7%	96.4%
FT	778	626	753	25	96.8%	80.5%
FW	268	228	256	12	95.5%	85.1%
MT	143	136	138	5	96.5%	95.1%
Division	**3,122**	**2,767**	**2,993**	**129**	**95.9%**	**88.6%**
College	**72,186**	**59,640**	**65,792**	**5,539**	**92.4%**	**82.5%**

Program	Completion % > College%	Success % > College%
AB	6.5%	7.2%
AT	6.2%	10.7%
AV	-5.6%	3.1%
CT	5.4%	15.0%
DR	1.4%	6.4%
DS	7.6%	11.1%
ET	4.2%	13.9%
FT	4.3%	-2.0%
FW	3.1%	2.6%
MT	4.1%	12.7%
Division	3.4%	6.2%

Program	Completion % > Division %	Success % > Division%
AB	3.0%	1.0%
AT	2.8%	4.5%
AV	-9.0%	-3.1%
CT	2.0%	8.8%
DR	-2.1%	0.2%
DS	4.1%	4.9%
ET	0.8%	7.7%
FT	0.9%	-8.2%
FW	-0.3%	-3.6%
MT	0.6%	6.5%
Division	0.0%	0.0%

All of the programs exceeded the college's average completion and success rates with two exceptions: Aviation Maintenance's completion rate was below average and Flight Technology's success rate was below average. See the next page for a graphical representation of these tables.

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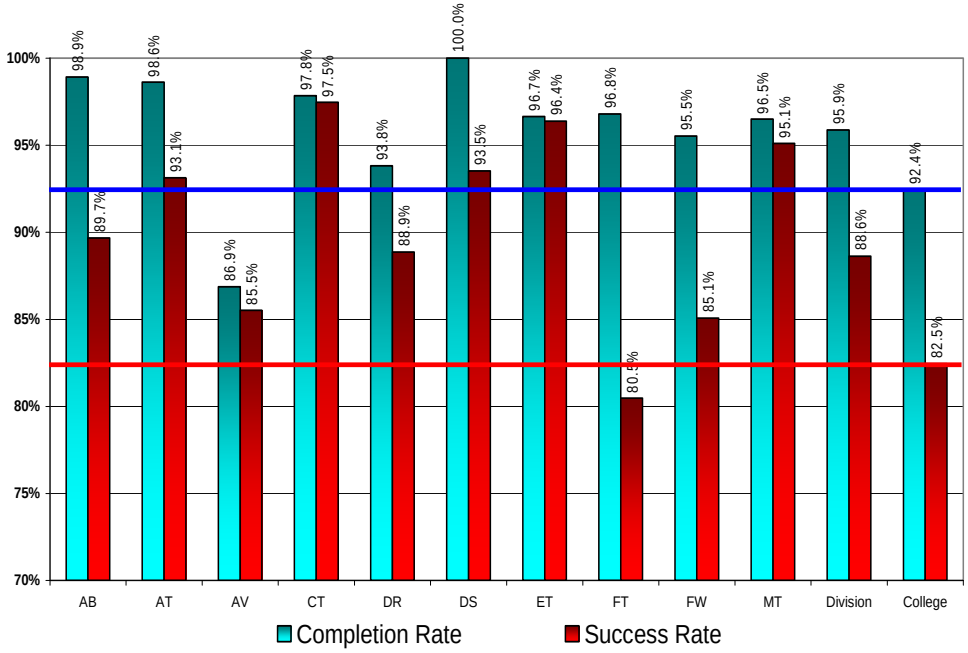
FY06 Assessment Evidence

Advanced Technology Division Student Retention FY06



Completion Rate = Total Completers / Enrollment 2nd Week
Success Rate = Completers with ABCP Grades / Total Completers
College Rates = All College Credit Courses

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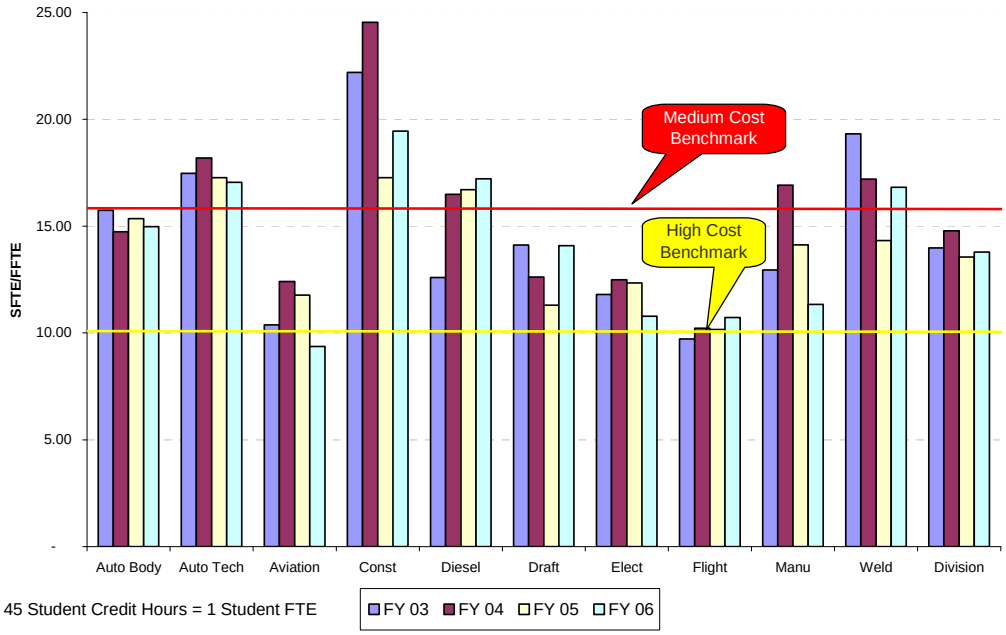
Credit Hour Student : Faculty Ratios



45 Student Credit Hours = 1 Student FTE

Diesel Technology Employability Skills Discussion

Outcome
Demonstrate EAS skills required for initial employment and advancement in the diesel industry that include: Attendance, proper attire, customer relations, following directions, working in teams and understanding work rules and ethics.

Indicators:
80% of the first year students will qualify for EAS skills status by receiving a recommendation from Diesel faculty members. 90% of second year students will complete their EAS skills criteria to qualify for EAS status will be determined and published by faculty prior to the start of the academic year.
Information will be documented in student portfolio
Student information will be communicated with student, faculty, advisory committee, business/industry, and college and program accreditors.

Outcome
Demonstrate safe work practices and tool usage, while performing operations while in a shop environment.

Indicators:
90% of all students will pass a safety written and hands on test, the test will be administered after the first week of each term. The test will be OSHA approved. The test will be administered by faculty. Students will demonstrate and understanding of MSDS procedures.
Information will be documented in student portfolio
Student information will be communicated with student, faculty, advisory committee, business/industry, and college and program accreditors.

Goal
Demonstrate technical skills and knowledge to pass the ASE and AED certification exams in all program areas.

Indicators:
90% of the students who complete the program will have gained the necessary competencies to pass the ASE and AED certification exams. These tests are established and administered by ASE and AED record of the certification results from ASE at the request of the Diesel program faculty.
Information will be documented in student portfolio
Student information will be communicated with student, faculty, advisory committee, business/industry, and college and program accreditors.

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Analysis

Based on assessment results or other evidence, what program areas (new or continuing) need attention?

The program needs to increase student FTE by at least 2 per faculty. The ratio of students to faculty has substantially decreased from the prior year but is higher than it was in FY03.

Equipment Needs

Hydraulic System Lab Station $20,000

This is an electronically controlled hydraulic system which represents the off-highway industry standards. It will be mounted on a mobile training station and will include full authority diagnostic access.

Fuel System Lab Station $20,000

This is part of an engine, mounted on an engine stand, and would simulate a full authority electronic fuel system.

Electronic Diagnostics Lab Station $20,000

This is a mobile truck chassis with electronic circuit systems that represent multiplexing and full authority diagnostic access.

Brake System Lab Station $20,000

This is an airbrake system that will represent current industry highway trucks. It will include electronic diagnostics, ABS and is mounted on a mobile stand.

Diesel Engine Repair Lab Station $20,000

This is a 16 liter highway truck engine, mounted on an engine stand, with full authority diagnostic emission control system.

Power Train Lab Station $20,000

This is an Allison automatic transmission training module, mounted on a stand, with full authority diagnostic control systems.

Recruiting Materials $15,000

This is a complete transportable set of high school recruitment display and demonstration materials to include: LCD projectors, computer, industry diagnostic software, etc.

Bio- Diesel Lab Station $35,000

This is a complete engine dedicated to running experiments on effects of bio-diesel fuels. This station will be mounted and have full diagnostics access. The station will be used by both the diesel and science faculty and students.

Building Exhaust System $30,000

This will upgrade the existing building exhaust system to conform to industry safety standards.

Full Authority Vehicle Electronic Control Diagnostic Lab Station $50,000

This station will incorporate all of the vehicle's computers electronic control systems into a master control system. The net effect is to connect all of the computers and associated diagnostics into one master control.

Overall, what strengths do you believe your unit demonstrated in 2005-2006?

The Diesel program instructors meet their basic goals of updating course textbooks, creating new classroom presentations and adding new lab stations. They also meet other program goal of increasing student enrollment, funding for new lab equipment,

and training aids. In addition they are continuing to update the curriculum in response to advisory committee recommendations. Evidence was gathered from class evaluations, Advisory committee comments, and the recent success enjoyed by the program in searching for funding. We used the Qualitative assessment based on diesel industry standards to determine how the students perform in the workplace. These standards are determined by our advisory committee and rely heavily on their input.

Overall, what challenges do you believe your unit faced in 2005-2006?
The biggest challenge faced was the college as a whole was in a major cut back mode and this put us into a maintain the diesel program mode.

What conclusions do you draw from this analysis about needed improvements or changes in 2007-2008?

The diesel program needs to find stable funding to build a solid foundation that will allow us to continue to maintain a progressive learning environment for the students. Explore a new 1 year non-credit accelerated option for the Diesel program

Assessing Employability Skills

The programs in the division train students for entry level employment. As such, a common program learning outcome is the student's ability to demonstrate the following employability skills:

Dependability
- Attends regularly
- Arrives on time
- Provides timely communications

Safety
- Understands and adheres to safety rules/regulations
- Maintains a clean and safe work area
- Safe and appropriate use of tools and equipment
- Identifies and reports unsafe conditions

Relations with Others
- Communicates well
- Follows instructions
- Accepts feedback and responds appropriately
- Works as a team member
- Works well with diversity

Quality of Work
- Continuously improves technical knowledge and skills
- Consistently completes accurate, thorough and acceptable work
- Accountable to production and service standards

Professional Qualities
- Representative of the business
- Dresses appropriately
- Courteous to others
- Provides good customer service
- Understands career pathways

Assessing these employability skills in the programs has been undocumented or inconsistent (other than in co-operative education). Therefore, the following division-wide employability assessment process will be available for implementation by the programs' faculty.

<u>The College is an Extension of the Workplace</u>

The faculty will emphasize to the students that a primary goal of the program is to prepare entry level employees for the workforce. As such, students in the program will be treated by the faculty as potential employees. All students will be considered "probationary employees" until they are promoted to an "entry level employee" status. This promotion is earned through a formal performance review. Students who exit the

program with the “entry level employee” status will receive an employability skills certificate from the program and are eligible for faculty recommendations.

The Performance Review Process

During the middle of the program, a student may initiate an employee performance review. The student will prepare a self-evaluation based on the employability skills listed above and other criteria as identified by the faculty (portfolio, resume). This self-evaluation will be submitted to the faculty for review. The faculty will schedule a formal performance review based on the self-evaluation. During the review, the faculty will assume the role of the student’s employment supervisor and provide performance feedback to the student. Based on the overall assessment of the student’s employability skill attainment, the faculty may promote the student to the “entry level employee” status. A student who is at the ‘entry level employment’ status may lose that status for failing to maintain employability skill standards as documented by the faculty. If the student is not promoted or loses their promotion, the faculty will document corrective activities that may qualify the student for promotion.

Performance Indicators

70% of the students will initiate a performance review after completing 30 credits in the program. Of these students, 90% will be promoted to and exit with the “entry level employee” status.

The program’s advisory committee will annually review the program outcomes performance indicators to validate the reliability and effectiveness of the assessment methods.