

# **HAWAI'I COMMUNITY COLLEGE PROGRAM REVIEW REPORT**

## **Automotive Mechanics Technology (AMT)**

**November 30, 2007**

**Assessment Period: July 1, 2004 to June 30, 2007**

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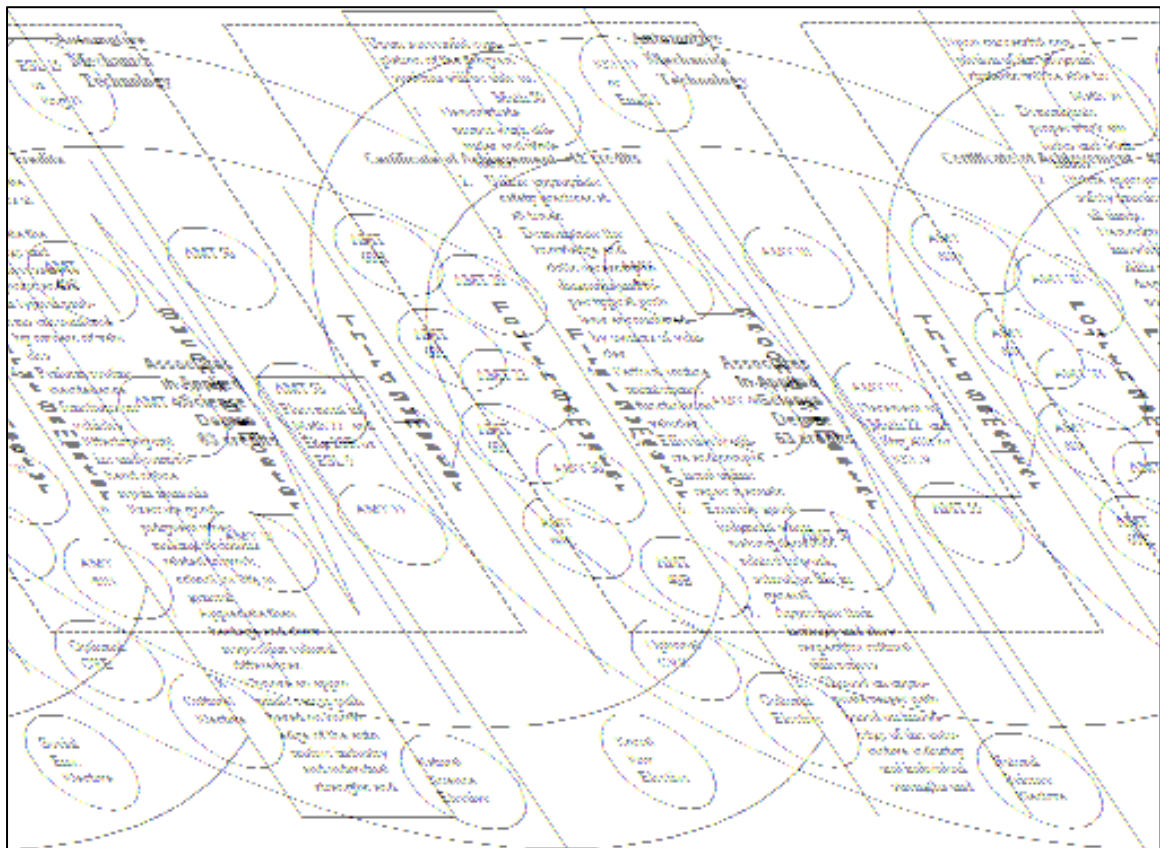
*Program Review at Hawai'i Community College is a shared governance responsibility related to strategic planning and quality assurance. It is an important planning tool for the college budget process. Achievement of Student Learning Outcomes is embedded in this ongoing systematic assessment. Reviewed by a college wide process, the Program Reviews are available to the college and community at large to enhance communication and public accountability.*

**HAWAII COMMUNITY COLLEGE**  
**Automotive Mechanics Technology (AMT)**  
**2007-2008**

**A. Program Effectiveness**

1. The Automotive Mechanics Technology program (AMT) is a vocational-technical program that prepares the student for employment as a general mechanic in a service station or auto dealer's shop, or as a specialty mechanic, or a specialist on engine tune-ups or electrical systems. The program offers both a two-year Associate of Science degree and a Certificate of Achievement. Students learn skills to succeed in the workplace as well as in life.

The following program map shows the AMT courses taken by semester. A new cohort starts the program each fall. It is designed to be completed in two years or four semesters. Students may earn a Certificate of Achievement after successfully completing their third semester if they also complete the required Math and English courses.



2. All program learning outcomes are assessed by a combination of observation and written examination. Examinations are provided by the book publisher. Each module contains a lecture and hands on portion. Hands on activities are assessed by instructor observation.

Students are encouraged to take the ASE exam after their third semester but it is not a requirement. The ASE exam is conducted by the National Institute for Automotive Service Excellence and is a nationally recognized credential; less than 25% of students elect to take the exam. Instructors keep informal records of students passing the exam. Recent data recorded follows:

Year Completed the Program	Total Taking the Exam	Number Passing the Exam	Percentage Passing the Exam
2003	3	2	67%
2005	4	4	100%
2007	2	2	100%

The following indicates how courses are assessed:

Course	Hands On Project	Written Exam
First Semester		
<u>AMT 20</u> Introduction to Auto 1 credit	Micrometer – students measure a bar; they must get 100%	<ul style="list-style-type: none"> <li>▪ Students watch videos on Fire Safety and Blood Born Pathogens. Both videos come with a standardized objective test which students take.</li> <li>▪ Students must get 100% on the Shop Safety test. They may retake it 3 times. If they do not pass within the 3 tries they are referred to a counselor to explore other career options.</li> </ul>
<u>AMT 23</u> Lubrication 1 credit	Students work with various lubricants and both friction and anti-friction bearings. <i>Assessment is based on instructor's observation of group</i>	<ul style="list-style-type: none"> <li>▪ Written exam covering symbols and proper disposal of hazardous materials</li> </ul>

<u>AMT 30</u> Engines 7 credits	Overhaul engine as a mini group; engine is put into a car to see if it runs. <i>Assessment is based on instructor's observation of group and whether the engine starts</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
<u>AMT 40B</u> Fuel Systems 3 credits	Students replace a fuel pump as a group or are led through a fuel system diagnostic. They work with different types of fuel injection systems. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
Second Semester		
<u>AMT 40C</u> Electrical Systems 6 credits	Depending on the live jobs available, students may charge a battery, replace a battery, or wire a chassis. They learn to read a wiring diagram. Students recognize and trouble shoot common electrical system problems such as electrical shorts and parasitic draw; they also experience charging and starting systems. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
<u>AMT 46</u> Power Train 4 credits	Students work on cars with a standard transmission. They work with the manual transmission, clutch, trans axle, or rear axle. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Multiple written exams from publisher</li> </ul>
<u>AMT 57</u> Emission 2 credits	Students use a scan tool to determine emissions; they diagnosis problems based on emission readings from a car's internal computer; they learn about emissions – anything that comes out of a car's engine. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
Third Semester		
<u>AMT 50</u> Auto Transmission 4 credits	Students work on cars with a automatic transmission; they overhaul rear drive and trans axle. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
<u>AMT 53</u> Brake Systems 4 credits	Students change oil and pull wheels to check brakes; they may do a brake overhaul; they use a brake lathe to machine rotors and drums. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>

<u>AMT 55</u> Suspension/Steering 4 credits	There is no shop assessment for this module since the program does not have the necessary equipment. Students may change the suspension and steering but without the Alignment Machine, they can not align the car.	<ul style="list-style-type: none"> <li>▪ Written exam from publisher</li> </ul>
Fourth Semester		
<u>AMT 60H</u> Elec./Fuel Systems & related Components 3 credits <u>AMT 60I</u> Engines and related Components 3 credits <u>AMT 60J</u> Susp./Brakes & related Components 3 credits <u>AMT 60K</u> Power Train/Transmissions & related Components 3 credits	Students diagnose what is wrong with a car. The instructor confirms their diagnosis or suggests they look at other areas. Once the problem is properly diagnosed, the student repairs the problem. The problems vary depending on the live jobs brought in. <i>Assessment is based on instructor's observation</i>	<ul style="list-style-type: none"> <li>▪ Written exams from publisher</li> </ul>

**Table 1—List of Program Learning Outcomes** (add rows as needed)

1. Demonstrate proper work attitudes and work habits.
2. Utilize appropriate safety practices at all times.
3. Demonstrate the knowledge and skills necessary to diagnosis and repair typical problems encountered by owners of vehicles
4. Perform routine maintenance functions on vehicles
5. Effectively utilize and comprehend online repair manuals
6. Exercise good judgment when making decisions related to work, school, or life in general
7. Appreciate their heritage and show respect for cultural differences
8. Choose an appropriate career path based on knowledge of the automotive industry and individual strengths and weaknesses

**Table 2—Program Learning Outcomes by Courses**

Most all program learning outcomes are addressed by each course. The degree and level depends on the course and the semester the students are in. It is expected that their level of comprehension and expertise will increase with each semester. From early on students are instructed in proper safety and work procedures. They start developing critical thinking skills that allow them to diagnose automotive problems. They build on their technical skills with each class and are expected to treat all persons with respect.

Course	Program Learning Outcome							
	1 Work Attitude Habits	2 Safety	3 Diagnose	4 Perform Maintenance	5 Online Repair Manuals	6 Exercise Good Judgment	7 Cultural Awareness	8 Career Path
First Semester								
AMT 20	X	X			X	X	X	
AMT 23	X	X			X	X	X	
AMT 30	X	X			X	X	X	
AMT 40B	X	X			X	X	X	
Second Semester								
AMT 40C	X	X	X	X	X	X	X	
AMT 46	X	X	X	X	X	X	X	
AMT 57	X	X	X	X	X	X	X	
Third Semester								
AMT 50	X	X	X	X	X	X	X	X
AMT 53	X	X	X	X	X	X	X	X
AMT 55	X	X	X	X	X	X	X	X
Fourth Semester								
AMT 60H	X	X	X	X	X	X	X	X
AMT 60I	X	X	X	X	X	X	X	X
AMT 60J	X	X	X	X	X	X	X	X
AMT 60K	X	X	X	X	X	X	X	X

**Table 3—Levels of Implementation of PLO Assessment** (for each PLO, Indicate ONE level of implementation; add rows as needed)

	A	D	P	SCQI	Assessment Strategy
1		X			
2		X			
3		X			
4		X			
5		X			
6		X			
7		X			
8		X			

Key (reference: Barbara Beno’s letter, 9-12-07; ACCJC’s evaluation of Institutional effectiveness, rubric III): A=Awareness, D=Development, P=Proficiency, SCQI=Sustainable Continuous Quality Improvement

**Table 4A—Percentage of Program Courses with SLO’s**

<b>_100_ % of Program courses with SLO’s</b>	<b>Of these, _100_ % are being assessed</b>
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**Table 4B—Percentage of Program Courses Reviewed within the Previous 5 Years**

**\_100\_ %**

<b>Course</b>	<b>Method of Assessment; O = Observation; E = Written Exam</b>							
	<b>1</b> Work Attitude Habits	<b>2</b> Safety	<b>3</b> Diagnose	<b>4</b> Perform Maintenance	<b>5</b> Online Repair Manuals	<b>6</b> Exercise Good Judgment	<b>7</b> Cultural Awareness	<b>8</b> Career Path
<b>First Semester</b>								
AMT 20	O	E			O & E	O	O	
AMT 23	O	O			O & E	O	O	
AMT 30	O	O			O & E	O	O	
AMT 40B	O	O			O & E	O	O	
<b>Second Semester</b>								
AMT 40C	O	O	O & E	O & E	O	O	O	
AMT 46	O	O	O & E	O & E	O	O	O	
AMT 57	O	O	O & E	O & E	O	O	O	
<b>Third Semester</b>								
AMT 50	O	O	O & E	O & E	O	O	O	O
AMT 53	O	O	O & E	O & E	O	O	O	O
AMT 55	O	O	O & E	O & E	O	O	O	O
<b>Fourth Semester</b>								
AMT 60H	O	O	O & E	O & E	O	O	O	O
AMT 60I	O	O	O & E	O & E	O	O	O	O
AMT 60J	O	O	O & E	O & E	O	O	O	O
AMT 60K	O	O	O & E	O & E	O	O	O	O

**3. Program Strengths and Weaknesses**

The program is healthy. Demand based on new and replacement positions in the county is considerably higher than the number of majors or graduates. Industry support also indicates strong demand for graduates. Number of degrees and certificates earned increased significantly in the three year period.

The average class size and fill rate positively increased for the most recent reporting period along with FTE program enrollment while the cost per students semester hour (SSH) has decreased. Academic and technical skill attainment as well as completion rates have remained steady at an acceptable percentage for the three reporting periods.

Program learning outcomes have been assigned to each course. All program learning outcomes are being assessed either by instructor observation or written exam, or both. Instructor observation is a key assessment strategy. The program plans to investigate how rubrics or check lists might be used to document instructor observations.

**Program Strengths (S1, etc.) and Weaknesses (W1, etc.)**

**Strengths**

1. Instructors’ knowledge and reputation in the community
2. High demand for well-trained auto mechanics
3. Students work on live jobs

**Weaknesses**

1. Newer cars need different equipment; the program does not have this equipment or the budget to purchase it
2. Student expectations about auto mechanics is unrealistic; they become disenchanted and then frustrated upon discovering that the work isn’t fun and is harder and dirtier than they planned
3. Cost of the program becoming nationally certified; NATEF certification requires substantial initial outlays for equipment and routine equipment replacements. Equipment requirements are based on student counts; in most instances where a program is getting by with one piece of equipment NATEF would require multiple pieces. NATEF requirements depreciate equipment more rapidly necessitating replacement much sooner than the program is use to.

**Action Plan including Budget Request**

**Table 5—Top 6 Non-Cost Items (Including SLO & PLO completion, and assessment)**

Program faculty need to find ways to document assessments and make assessments by observation less subjective.

<b>Task:</b>	<b>Academic yr.</b>	<b>Who is responsible</b>	<b>Best Fits which ADP Goal</b>	<b>Addresses which strength or weakness</b>
Review course level outcomes and submit necessary curriculum forms to update course outlines and syllabi.	2007-08 ongoing	Program faculty	A & C	S1, S2 & S3
Develop and or document assessment strategies for student learning outcomes.	2007-08	Program faculty	A, C & E	S1, S2 & S3



Develop a system to track the results of students taking the ASE exams.	2007-08	Program faculty	A, C & E	S1, S2 & S3
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**Table 6A. —Top 6 Cost Items**

Tool replacements have not occurred in several years. The automotive mechanics field is tool intensive and tools need to be updated as changes occur in vehicles. Newer model cars require different tools.

<b>Task:</b>	<b>Academic Yr.</b>	<b>Who is responsible</b>	<b>\$ amount &amp; budget category Except R/M</b>	<b>Best fits which ADP Goal</b>	<b>Supported by ADP Resource Requirement? Y/N</b>	<b>Addresses which strength or weakness</b>
Complete purchase of the alignment system and get it installed prior to the start of fall 2008.	2006-07	Program faculty and business office	\$75,000 EQ	A, C & E	Y	S1,S2,S3 & W1
Request funds to purchase needed equipment and tools	2007-08	Program faculty, Administration	\$56,000 EQ & SE	A, C & E	Y	S1,S2,S3 & W1
Attend a NATEF event	2007-08	Program faculty, Administration	\$4,000 SE	D	Y	S1,S2,S3 & W1

**Key to abbreviations:**

**ADP Goals are: A, B, C, D, E**

**Budget Categories: P=Personnel; S1x=Program Review Special Fund; SE=Supplies Enhanced; Eq=Equipment**

**Strengths/Weaknesses are numbered (S1, S2, S3, W1, W2, W3—from A.3)**

**Table 6B.--Repair and Maintenance**

<b>Nature of Problem</b>	<b>Describe Location: e.g.</b>
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	<b>Building(s) &amp; Room(s)</b>

**Table 7—Equipment Depreciation, if applicable** (add rows as needed; examples given)

<b>Program Assigned Equipment (E) and Controlled Property (CP) (List in order of chronological depreciation date)</b>	<b>Category: CP or E</b>	<b>Expected Depreciation Date</b>	<b>Estimated Replacement Cost</b>
1. Alignment system	E	Do not currently have	\$75,000
2. Renew <i>Mitchell On Demand</i> , a computer based repair manual, subscription	CP	2008-09	\$4,000 for 3 year subscription
3. New model scan tool	E	Do not currently have	\$12,000
4. Replace tools	CP		\$10,000
5. Transmission engine cradle.	CP	Do not currently have	\$5,000
6. Two above ground hoists	CP	Do not currently have	\$10,000
7. Hot water pressure washer	CP	2005	\$3,000
8. Air Conditioning Recovery and Charging Station	CP	2005	\$5,000
9. Backup system for <i>Mitchell on Demand</i>	CP	Do not currently have	\$3,000

**Key to abbreviations:**

**CP=Controlled Property w/item value \$1K-\$5K**

**E=equipment w/item value >\$5K;**

**C. Table 8—Data Elements**

	AY 04-05	AY 05-06	AY 06-07
AMT			
1. Annual new and replacement positions in the State	4107	4107	4107
2. Annual new and replacement positions in the County	103	103	103
3. Number of majors	55	51	53

4. Student Semester Hours for program majors in all program classes	444	420	504
5. Student Semester Hours for Non-program majors in all program classes	0	0	0
6. Student Semester Hours all program classes	444	420	504
7. FTE Program enrollment	29.6	28	33.6
8. Number of classes taught	7	7	7
9. Determination of program's health based on demand (Health, Cautionary, or Unhealthy)	Healthy	Healthy	Healthy
10. Average Class Size	19	18.29	21.29
11. Class fill rate	95%	91.43%	106.43%
12. FTE of BOR appointed program faculty	2	2	2
13. Student/Faculty ratio	27.5:1	25.5:1	26.5:1
14. Number of Majors per FTE faculty	34.38	31.88	33.13
15. Program Budget Allocation (Personnel, supplies and services, equipment)	\$82,262.00	\$82,068.00	\$83,072.00
16. Cost Per Student Semester Hour	\$185.27	\$195.40	\$164.83
17. Number of classes that enroll less than ten students	0	0	0
18. Determination of program's health based on Efficiency (Healthy, Cautionary, or Unhealthy)	Healthy	Healthy	Healthy
19. Persistence of majors fall to spring	83.64%	84.31%	86.79%
20. Number of degrees earned (annual)	5	12	19
21. Number of certificates earned (annual)	9	7	16
22. Number of students transferred (enrolled) to a four-year institution in UH	0	0	0
23. Perkins core indicator: Academic Attainment(1P1)	53.85%	75.00%	76.47%
24. Perkins core indicator: Technical Skill Attainment (1P2)	86.67%	95.24%	94.44%
25. Perkins core indicator: Completion Rate (2P1)	46.67%	52.38%	66.67%
26. Perkins core indicator: Placement in Employment Education, and Military (3P1)	100.00%	100.00%	72.73%
27. Perkins core indicator: Retention in Employment (3P2)	100.00%	100.00%	100.00%
28. Perkins core indicator: Non Traditional Participation (4P1)	12.20%	9.80%	10.42%
29. Perkins core indicator: Non Traditional Completion (4P2)	12.50%	7.14%	15.38%
30. Determination of program's health based on effectiveness (Healthy, Cautionary, Or Unhealthy)	Healthy	Healthy	Healthy
31. Determination of program's overall health (Healthy, Cautionary, or Unhealthy)	Healthy	Healthy	Healthy
32. Number of FTE Faculty	1.6	1.6	1.6