HAWAI`I COMMUNITY COLLEGE
PROGRAM REVIEW REPORT

MACHINE, WELDING &
INDUSTRIAL MECHANICS
(MWIM TECH)
TECHNOLOGY PROGRAM

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

MACHINE, WELDING AND INDUSTRIAL MECHANICS (MWIM) TECHNOLOGY PROGRAM 2007-2008

A. Program Effectiveness

1. The MWIM Tech Program accepts all students from all segments of our community that meet the Community College's open-door requirements. It is an open-entry/exit program that services multiple occupations with 2 Certificates of Completion, 2 Certificates of Achievement and 2 Associate of Applied Science Degrees and with the continued restructuring of this program, it will be able to also better service the installation, maintenance and repair occupations. The Career & Technical Education and workforce development curriculum offerings are designed to meet HawCC's imperatives and most of the modules are scheduled at times convenient for the Employers and working students as well as the traditional student.

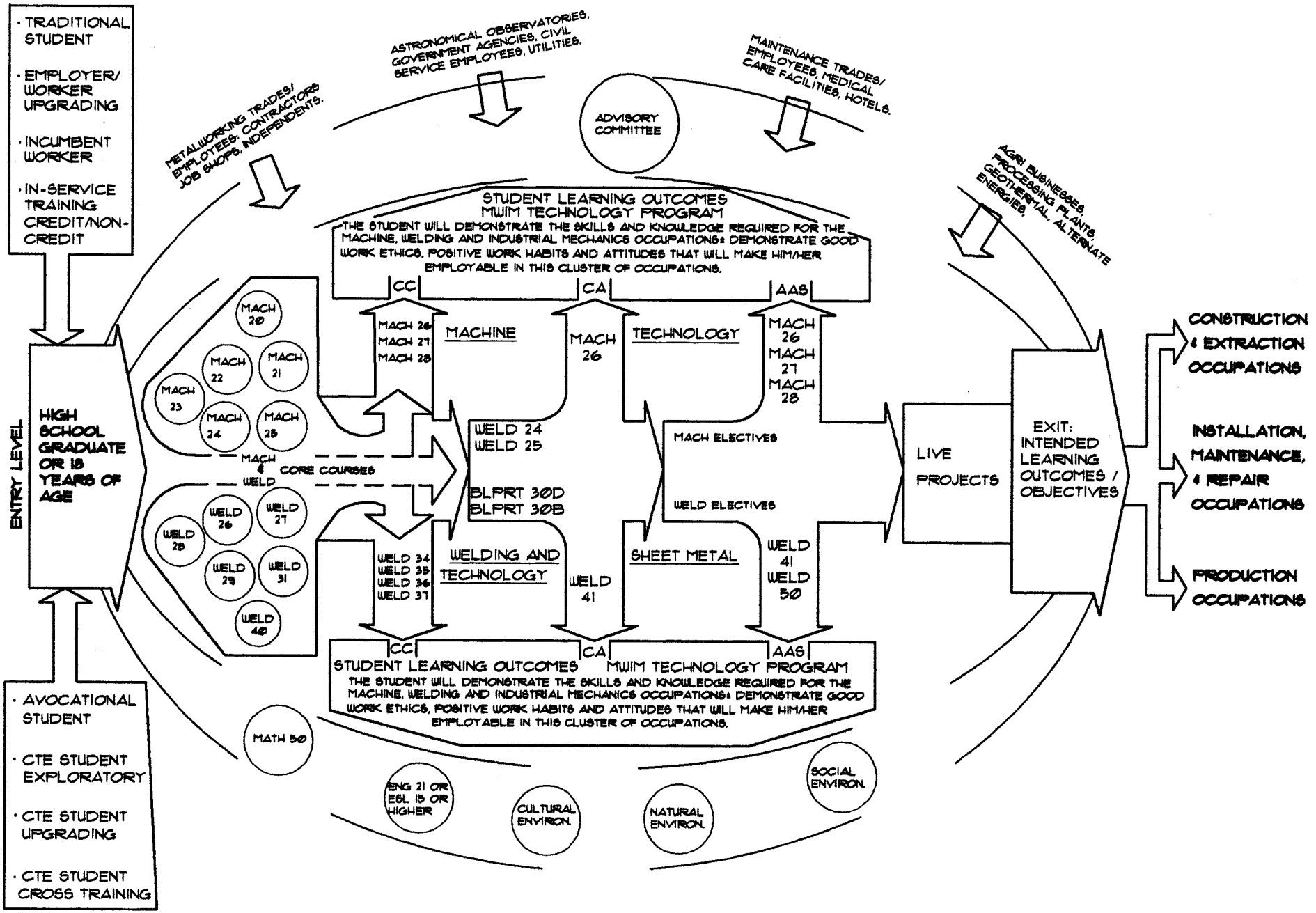
· TRADITIONAL STUDENT
· EMPLOYER/ WORKER UPGRADING
· INCUMBENT WORKER
· IN-SERVICE TRAINING CREDIT/NON-CREDIT
· AVOCATIONAL STUDENT
· CTE STUDENT EXPLORATORY
· CTE STUDENT UPGRADING
· CTE STUDENT CROSS TRAINING
ENTRY LEVEL
HIGH SCHOOL GRADUATE OR 18 YEARS OF AGE
METALWORKING TRADES/ EMPLOYEES; CONTRACTORS JOB SHOPS, INDEPENDENTS.
ASTRONOMICAL OBSERVATORIES, GOVERNMENT AGENCIES, CIVIL SERVICE EMPLOYEES, UTILITIES.
MAINTENANCE TRADES/ EMPLOYEES, MEDICAL CARE FACILITIES, HOTELS.
AGRI BUSINESSES, PROCESSING PLANTS GEOTHERMAL, ALTERNATE ENERGIES.
ADVISORY COMMITTEE
STUDENT LEARNING OUTCOMES MWIM TECHNOLOGY PROGRAM
THE STUDENT WILL DEMONSTRATE THE SKILLS AND KNOWLEDGE REQUIRED FOR THE MACHINE, WELDING AND INDUSTRIAL MECHANICS OCCUPATIONS: DEMONSTRATE GOOD WORK ETHICS, POSITIVE WORK HABITS AND ATTITUDES THAT WILL MAKE HIM/HER EMPLOYABLE IN THIS CLUSTER OF OCCUPATIONS.
CC
CA
AAS
MACH 20
MACH 22
MACH 21
MACH 23
MACH 24
MACH 25
MACH & WELD CORE COURSES
WELD 26
WELD 27
WELD 28
WELD 29
WELD 31
WELD 40
MACH 26
MACH 27
MACH 28
MACHINE
MACH 26
TECHNOLOGY
MACH 26
MACH 27
MACH 28
WELD 24
WELD 25
BLPRT 30D
BLPRT 30B
MACH ELECTIVES
WELD ELECTIVES
WELD 34
WELD 35
WELD 36
WELD 37
WELDING AND TECHNOLOGY
WELD 41
SHEET METAL
WELD 41
WELD 50
LIVE PROJECTS
EXIT: INTENDED LEARNING OUTCOMES / OBJECTIVES
CONSTRUCTION & EXTRACTION OCCUPATIONS
INSTALLATION, MAINTENANCE, & REPAIR OCCUPATIONS
PRODUCTION OCCUPATIONS
MATH 50
ENG 21 OR ESL 15 OR HIGHER
CULTURAL ENVIRON.
NATURAL ENVIRON.
SOCIAL ENVIRON.

TABLE 2
AVERAGE ANNUAL AND TOTAL JOB OPENINGS
2002 AND 2012
STATE OF HAWAII

SOC Code	Occupational Title	Employment		Change		Average Annual Openings Due to Growth		Due to Separations		Total
		2002	2012	Number	Percent					
47-0000	**Construction & Extraction Occupations**	**24,400**	**31,040**	**6,640**	**27.2**		**660**		**490**	**1,150**
47-2011	Boilermakers	90	90	0	0.0		0	*		*
47-2073	Operating Engineer & Other Const Equip Operat	1,710	2,040	330	19.3		30		40	80
47-2152	Plumbers, Pipefitters, & Steamfitters	1,470	1,780	310	21.1		30		30	70
47-2211	Sheet Metal Workers	590	730	140	23.7		10		10	30
47-2221	Structural Iron & Steel Workers	210	270	60	28.6		10	*		10
47-3000	Helpers, Construction Trades	1,600	2,010	410	25.6		40		70	110
49-0000	**Installation, Maintenance, & Repair Occupations**	**22,040**	**24,890**	**2,850**	**12.9**		**290**		**500**	**790**
49-9000	Other Installation, Maint, & Repair Occupation	11,680	13,540	1,860	15.9		190		250	440
49-9021	Heating, Air Cond, & Refrigeration Mech & Install	710	910	200	28.2		20		10	30
49-9041	Industrial Machinery Mechanics	480	560	80	16.7		10		10	20
49-9042	Maintenance & Repair Workers, General	6,740	7,950	1,210	18.0		120		130	250
49-9043	Maintenance Workers, Machinery	200	220	20	10.0	*		*		10
49-9096	Riggers	210	220	10	4.8	*		*		10
49-9098	Helper--Installation, Maintenance, & Repair Worker	690	810	120	17.4		10		20	40
49-9099	Installation, Maintenance, & Repair Worker, Other	1,010	1,070	60	5.9		10		20	30
51-0000	**Production Occupations**	**18,440**	**19,750**	**1,310**	**7.1**		**170**		**440**	**610**
51-2000	Assemblers & Fabricators	1,530	1,660	130	8.5		20		40	60
51-2041	Structural Metal Fabricators & Fitters	170	170	0	0.0		0	*		*
51-2099	Assemblers & Fabricators, All Others	470	510	40	8.5	*			10	20
51-4000	Metal Workers & Plastic Workers	1,560	1,840	280	17.9		30		40	70
51-4041	Machinists	310	340	30	9.7	*			10	10
51-4121	Welders, Cutters, Solderers, & Brazers	870	1,120	250	28.7		20		20	50
51-4199	Metal Workers & Plastic Workers, All Other	160	150	-10	-6.3		0	*		*

2. ***"The student will demonstrate the skills and knowledge required for the machine, welding and industrial mechanics occupations; demonstrate good work ethics, positive work habits and attitudes that will make him/her employable in this cluster of occupations."***

The MWIM Tech Advisory Council, A County of Hawaii/Island Wide Survey of Employers, Welder Certification Requirements, The American Welding Society Curriculum recommendations, The NCCER curriculum and the historical success of the current curriculum have guided the development and constant improvement of the desired learning outcomes of this program. Specific learning outcomes and details of the curriculum are a part of the desired learning outcomes.
Assessment of PLO:
After completing the prescribed sequence of courses, which have performance and written tests for assessment, the student will be a part of a team to fabricate "live projects" that includes most of the desired learning outcomes. The courses are structured mostly in 4 hr modules, are sequential and the course syllabi require good attendance, punctuality, safety, responsibility for the work area, teamwork, accepting supervision and quality and productivity standards. Each student is advised of their strengths and weaknesses within this team environment and is encouraged to correct any shortcomings. Placement in CVE work stations are directly related to the student's performance in this environment.

Table 1—List of Program Learning Outcomes

PROGRAM STUDENT LEARNING OUTCOMES

1. ***The student will demonstrate the skills and knowledge required for the machine, welding and industrial mechanics occupations; demonstrate good work ethics, positive work habits and attitudes that will make him/her employable in this cluster of occupations.***

SPECIFIC LEARNING OUTCOMES:

A. The student will demonstrate:
mechanical reasoning; form perception & spatial relations; numerical reasoning and communication skills as a part of the basic entry-level skills and knowledge to gain employment in the machining, welding, industrial mechanics or related fields.

B. The student will demonstrate:
the attributes of a good employee; good safety practices; positive work ethics; working collaboratively or independently under supervision; an awareness of hazardous materials and a responsibility for the orderliness and cleanliness of the workplace.

C. The student will demonstrate:
eye and hand coordination and dexterity in the proper set-up and use of the basic machine tools and equipment; metalworking equipment; the common welding & cutting processes; industrial mechanics equipment; material handling equipment and related machinery.

D. The student will demonstrate:
the applications of and the ability to use the common hand tools; layout tools; measuring tools; precision measuring tools; common cutting & forming tools, tools used with the common fasteners and specialty tools and the common metalworking and mechanic tools.

E. The student will demonstrate:
form perception and spatial relations in the applications of geometric construction; the three common methods of pattern development; industrial practices in framing and structural fabrication; practices in welding joint design & joint preparation and the common machine shop operations & practices.

F. The student will demonstrate:
the skills of a life-long learner; the ability to read blueprints; knowledge of metals and the common materials & supplies; the ability to do the work related math; the ability to communicate and read technical materials; and the ability to use available technical resources.

G. The student will demonstrate:
an awareness of our cultural, social and natural environment and be a contributing member of our community.

Table 2—Program Learning Outcomes by Courses

COURSE ALPHA & NO	SLO 1A	SLO 1B	SLO 1C	SLO 1D	SLO 1E	SLO 1F	SLO 1G
MACH 2O Intro to Machine Shop		X		X		X	
MACH 21 Measurement & Layout	X	X		X		X	
MACH 22 Hand tools & Bench work	X	X		X		X	
MACH 23 Basic Machine Tools	X	X	X	X		X	
MACH 24 Lathe I, Facing & Turning	X	X	X	X		X	
MACH 25 Shape alter & taper, Lathe	X	X	X	X		X	
MACH 26 Lathe II	X	X	X	X		X	
MACH 27 Vertical Mill & Intro to CNC	X	X	X	X		X	
MACH 28 Shaper, Line bore&Advance Machine	X	X	X	X		X	

	1A	1B	1C	1D	1E	1F	1G
WELD 17 General Welding		X	X				
WELD 20 Introduction to welding	X	X	X	X	X	X	
WELD 23 Basic Metalworking	X	X	X	X	X	X	
WELD 24 Measurement & Layout	X	X		X	X	X	
WELD 25 Metal Fabrication I, Sheet metal	X	X		X	X	X	
WELD 26 Basic Arc Welding	X	X	X			X	
WELD 27 Metal working Lab I	X	X					
WELD 28 Metalworking	X	X	X	X	X	X	
WELD 29 Oxy/acetylene weld, braze & cut	X	X	X			X	
WELD 30 Intermediate weld & fabrication	X	X	X			X	
WELD 31 Intermediate welding	X	X	X			X	
WELD 33 Sheet metal fabrication	X	X		X	X	X	
WELD 34 Welding Fabrication	X	X	X	X	X	X	
WELD 35 Metalworking Lab II	X	X					
WELD 36 Gas Metal Arc Weld (GMAW)	X	X	X			X	
WELD 37 Flux Cored Arc Weld (FCAW)	X	X	X			X	
WELD 38 Gas Tungsten Arc Weld (GTAW)	X	X	X			X	
WELD 39 Metal Fab II, Radial Line Dev.	X	X		X	X	X	
WELD 40 Qualification Procedures	X	X	X			X	
WELD 41 Advanced Welding	X	X	X			X	
WELD 50 Special processes in Welding	X	X	X		X	X	
WELD 53 Pattern Development	X	X	X	X	X	X	

COURSE ALPHA & NO	SLO 1A	SLO 1B	SLO 1C	SLO 1D	SLO 1E	SLO 1F	SLO 1G
GEN ED ELECTIVES Natural, Social & Cultural environment							X
MATH 50 or Higher Technical Mathematics	X					X	
ENG 21 or Higher Developmental Reading	X					X	
BLPRT 30D Blueprint reading for Machine trades	X					X	
BLPRT 30B Blueprint reading for Welders	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**
PLO #1A		X			Instructor observation of student's application of learning on "live projects". Standardized written and performance tests.
PLO #lB		X			"
PLO #1C		X			"
PLO #1D		X			"
PLO #1E		X			"
PLO #1F		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

100% of Program courses with SLO's	**Of these, 100% are being assessed**

Table 4B—Percentage of Program Courses Reviewed within the Previous 5 Years
100%

3. Program Strengths and Weaknesses

The MWIM Tech Program has improved since restructuring and is reasonably healthy in the demand, efficiency and effectiveness but can improve. The program continually addresses its weaknesses and the program restructuring is intended to show an improvement in the data elements in table 8.
Data elements 1 to 9, demand elements, would be positively changed with implementation of the planned restructuring and expansion of the curriculum. The employers and students the program serviced will increase the enrollment and the other data elements.
Data elements 10 to 18 efficiency elements, with the continued restructuring, there should be improvement with an increase in enrollment and an increase in class sizes. Program costs per unit of measure should be reduced with an increase in enrollment.
Data elements 19 to 30, effectiveness elements, measures do not include service to short term workforce development students who usually do not seek a degree. This aside, there should be some improvement in these elements with the planned increase in the traditional CA and AAS degree student in the Industrial Mechanics and RAC offerings.

Assessment of the Program Learning Outcomes is an ongoing process by the instructors as the student progresses with written tests, performance tests and assessment of individual students in teams working on "live projects". Inputs from the industry we service are used to develop the standards for measuring the learning outcomes.
"The student will demonstrate the skills and knowledge required for the machine, welding and industrial mechanics occupations; demonstrate good work ethics, positive work habits and attitudes that will make him/her employable in this cluster of occupations."
The real measure of the program learning outcomes, is the employment of the student and the success of the student as employees in their chosen careers. Many of the current students are already employed and are upgrading themselves for their current employer or for career changes. With the good relationship the program has with most of the employers, there is constant feedback on student success and shortcomings.

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

S1
The MWIM Tech Program has an excellent Advisory Council and good relationships with the industries it serves. Based on inputs from the industries and an Island wide survey of employers, the MWIM Tech (formerly Welding and Sheet Metal, WELSM) program received approval in February, 2003 to change and expand it's offerings and has been restructuring to address the needs of these industries. Federal RDP grants, Perkins grants, UH EIF funds, other funding and donations from the local industry and vendors has allowed the program to expand it's curriculum and training capabilities. The restructuring includes training that share a "common core" in metalworking and industrial mechanics. This initial phase of restructuring is a good foundation for the continued expansion of the curriculum and the expansion of the employers and students this program can service.

S2
The program has a dedicated facility (building 324) with mostly 1989 or earlier vintage equipment that can provide most of the training for metalworkers and some parts of the needs of industrial mechanics. A part of the funding has modified the Laboratory work stations with "plug-in" set-up and take-down capability. This allows sections of the lab space to be used for multiple activity training. This facility can accommodate an expanded curriculum offering with the proper scheduling and has the utilities for the installation of the needed trainers and equipment for the industrial mechanics training.

S3

The program has established itself as offering a curriculum scheduled at times convenient for the incumbent worker, employer/worker upgrading, in-service training and the traditional student. Most of the courses are scheduled in the afternoons and evenings and the instructional personnel hired accept this schedule. After the "sugar plantation economy" there was a decline in demand for welders and metalworkers. The new MWIM Tech program is designed for the Astronomy Technician; Hotel & Medical Care Maintenance Technician, Electric & Water Utilities Technician; Food Processing & Distribution Maintenance Technician; Construction worker; RAC Technician; Maintenance & Repair worker; other related trades as well as the traditional metalworking student.

W1

The program restructuring is not complete. The Industrial Mechanics/Maintenance portion of the curriculum has to be expanded to provide the training needed by the industries the program services. Refrigeration and Air Conditioning; Boiler operation and control; Hydraulics and Pneumatics; Metallurgy; Plumbing; and Industrial maintenance are needs that share a common core in metalworking and mechanics that needs to be expanded as a part of the MWIM Tech Program.

W2

The facility (building 324) needs major maintenance work to repair the damages of continuous acid rain since the volcanic eruption started in the 1980s. Re-roofing and changing all components of the gutter systems and service and repair of equipment that are a part of the facility. With the increased use of additional classroom space, there is a need for classroom furniture; whiteboards/chalkboards; audiovisual equipment and computers. Some space can be modified for faculty offices and will need the furnishing and computers with the internet connections.

W3

The MWIM Tech Program is equipment and supplies intensive and the students will not receive the proper training without current technology and adequate workstations. Most of the equipment is close to 20 years old or older and will require a systematic schedule of replacement. With the expansion of the curriculum new equipment with sufficient work stations will have to be provided and the needed supplies will also have to be provided. The Program S-account can be increased with more live-job activities and can help offset some of the increased supply needs.

B. Action Plan including Budget Request

Tables 5, 6 & 7

The assessment and improvement of the Program Learning Outcomes and Student Learning Outcomes is a vital part of the restructuring of the MWIM Tech Program and will change as the program completes the restructuring. The development of the new curriculum and course offerings will be dependent on having the MWIM Laboratory equipped with the necessary Trainers, Equipment and Supplies. The RDP Funding has provided a good start of the Industrial Mechanics part of this program and these budgetary requests are needed to complete the program restructuring and to maintain the present level of instruction.

Building 324 was completed in 1989 and is in need of Repairs and Maintenance. The roof and water collection system deterioration has been accelerated with the acid rain from the continuous volcanic eruption and needs replacement. The Equipment that is a part of the building has not been properly serviced and maintained for almost 20 years and needs to be serviced. The equipment purchased when the facility was opened in1989 has to be replaced and is included in this budget on a 5 year replacement schedule.

Table 5—Top 6 Non-Cost Items (Including SLO & PLO completion, and assessment)
(add rows as needed; examples given)

Task:	Academic yr.	Who is responsible	Best Fits which ADP Goal	Addresses which strength or weakness
1. Assess and implement SLO & PLO changes	2007-08 and beyond as needed	Program Coord.	B,C	W1
2. Develop industrial mech curriculum/ approvals	2007-08	Program Coord.	Goal C	W1
3. With approvals, initiate course offerings	Fall 2009	Program Coord.	Goal C	W1
4. With the acquisition of equipment/trainers-expand offerings	Spring 2009, Fall 2009	Program Coord.	Goal C	W1
5. With the funding continue expanding offerings	Fall 2009	Program Coord.	Goal C	W1
6. Evaluate/ modify MWIM curriculum	Continuous/ with funding/ expansion	Program Coord.	Goal C	W1

Key to abbreviations:
ADP Goals are: A, B, C, D, E
Strengths/Weaknesses are numbered (S1, S2… W1, W2…--from A.3.)

Table 6A. —Top 6 Cost Items (add rows as needed; examples given)

Task:	Academic Yr.	Who is responsible	$ amount & budget category Except R/M	Best fits which ADP Goal	Supported by ADP Resource Require-ment? Y/N	Addresses which strength or weakness
1.Furnish RAC/ Mech Lab	2008-09	Program Coord.	$150K, Equip	C,E	N	W1, W3
2.Onetime startup supplies/ (small tools) for RAC/ Mech Lab	2008-09	Prog. Coord.	$30K Supplies /small tools; S1x	C		W1,W3
3.hire 1 FTE-Faculty	2008-09	Program Coord.	$50K, P	A,C	N	W1
4. Furnish (2)Faculty Office	2008-09	Program Coord.	$8K, Equip./ Furni-ture; S1x	A, C		W2
5. Furnish class room/Lab	2008-09	Program Coord.	$10K, Equip./ Furni-ture	C, E		W2
6. Complete furnishing Rac/Mech Lab	2009-10	Program Coord.	$200K, Equip.	C,E	N	W1, W3
7. Increase Supply(B) Budget	2008-beyond	Program Coord.	Increase startup costs of program expand. 5 yr adj. $7K/yr	C,E		W1,W3

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

Nature of Problem	Describe Location: e.g. Building(s) & Room(s)
Leaking roof, irreparable gutter system, Deterioration of building Exterior	Building 324
Repair and maintenance of 3Ton Overhead Crane	Building 324
Service/Repair Forced Air Ventilation systems (7ea.)	Building 324
Service/Repair Air Compressor	Building 324
Service and Repair Roll-up Doors	Building 324

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

Program Assigned Equipment (E) and Controlled Property (CP) (List in order of chronological depreciation date)	Category: CP or E	Expected Depreciation Date	Estimated Replacement Cost
(1989) Multiple Operator Weld Power Source	E	2009	$15K
(1989) 5 ea. GTAW Power Sources	E	1 each/year: 2009, 10, 11, 12, 13	$6K each Total cost: 5yrs=$30K
(1989) 5 ea. GMAW Power Sources w/Feedr & Gun	E	1 each/year 2009,10,11,12, 13	$7K each Total cost: 5 yrs=$35K
(pre 1989) 5 ea, Individual SMAW (Inverter Type) Power Sources	E	1 each/year 2009,10,11,12, 13	$6K each Total cost: 5yrs=$30K
(1989)Oxy/Acet Manifold system, Weld, Braze	E	2009	$5K
(1989)Oxy/Acet Manifold system, Cutting,	E	2010	$7K
Update Faculty (3) PCs and connect Fiber optics	CP	2010	

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
MWIM_WELS_MST			
1. Annual new and replacement positions in the State	276	276	276
2. Annual new and replacement positions in the County	5	5	5
3. Number of majors	31	21	24
4. Student Semester Hours for program majors in all program classes	170	192	182
5. Student Semester Hours for Non-program majors in all program classes	24	80	88
6. Student Semester Hours all program classes	194	272	270
7. FTE Program enrollment	12.93	18.13	18
8. Number of classes taught	8	10	12
9. Determination of program's health based on demand (Health, Cautionary, or Unhealthy)	HEALTHY	HEALTHY	HEALTHY
10. Average Class Size	11.13	14.4	11.25
11. Class fill rate	134.85%	83.72%	72.58%
12. FTE of BOR appointed program faculty	1	1	1
13. Student/Faculty ratio	31:1	21:1	24:1
14. Number of Majors per FTE faculty	23.31	13.13	12
15. Program Budget Allocation (Personnel, supplies and services, equipment)	$67,460.90	$80,780.00	$99,460.00
16. Cost Per Student Semester Hour	$347.74	$296.99	$368.37
17. Number of classes that enroll less than ten students	2	2	4
18. Determination of program's health based on Efficiency (Healthy, Cautionary, or Unhealthy)	HEALTHY	HEALTHY	HEALTHY
19. Persistence of majors fall to spring	74.19%	57.14%	79.17%
20. Number of degrees earned (annual)	0	3	5
21. Number of certificates earned (annual)	7	5	0
22. Number of students transferred (enrolled) to a four-year institution in UH	0	0	0
23. Perkins core indicator: Academic Attainment(1P1)	44.44%	83.33%	60.00%
24. Perkins core indicator: Technical Skill Attainment (1P2)	100.00%	100.00%	83.33%
25. Perkins core indicator: Completion Rate (2P1)	13.33%	40.00%	16.67%
26. Perkins core indicator: Placement in Employment Education, and Military (3P1)	.00%	.00%	100.00%
27. Perkins core indicator: Retention in Employment (3P2)	.00%	.00%	50.00%
28. Perkins core indicator: Non Traditional Participation (4P1)	4.35%	14.29%	4.55%
29. Perkins core indicator: Non Traditional Completion (4P2)	.00%	50.00%	.00%
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	1.33	1.6	2

Note: Items 9 & 18, 30 & 31 are determined by writer, Items 23-29 use Perkins data from previous year.
Approved 10/25/07

NAME _____ SEMESTER/YEAR BEGAN_____

HAWAII COMMUNITY COLLEGE, 2006-2007
Machine, Welding and Industrial Mechanics Technologies (MWIM) and
WELDING & SHEET METAL OPTION

Program Requirements (AAS Overall [71 credits, cumulative GPA 2.0 required from all courses])
(CA Overall [38 credits, cumulative GPA 2.0 required from all courses])
(CC Overall [20 credits, cumulative GPA 2.0 required from all courses])

Course	Course Name	Semester, Year & Grade	CREDITS CC	CA	AAS
FALL:					
WELD 26	Basic Arc Welding		2	2	2
WELD 27	Metalworking Lab I		2	2	2
WELD 28	Metalworking		2	2	2
WELD 29	Oxy-fuel Weld, Braze and Cut		2	2	2
MACH 20	Intro to Machine Technology		---	1	1
MACH 21	Measurement and Layout		---	1	1
MACH 22	Hand tools and Bench work		---	1	1
MACH 23	Basic Machine Tools		---	1	1
SPRING:					
WELD 31	Intermediate Welding		2	2	2
WELD 40	Qualification Procedures		2	2	2
BLPR 30D	Blueprint Reading for Machine Trades		---	3	3
MACH 24	Lathe Facing, Turning and Knurling		---	2	2
MACH 25	Lathe Shape and Altering and Tapering		---	2	2
WELD 24	Measurement and Layout		---	2	2
WELD 25	Metal Fab I, Sheet Metal		---	2	2
FALL:					
WELD 34	Weld Fabrication		2	---	---
WELD 35	Metalworking Lab II		2	---	---
WELD 36	Gas Metal Arc Welding (GMAW)		2	---	---
WELD 37	Flux-Cored Arc Welding (FCAW)		2	---	---
BLPR 30B	Blueprint for Welders		---	3	3
WELD 41	Advanced Welding		---	8	8
ELECTIVES	WELD or MACH Electives		---	---	4
SPRING:					
WELD 50	Special Processes in Welding		---	8	8
ELECTIVES	WELD or MACH Electives		---	---	6
WELD 93V (Optional)	Cooperative Vocational Education (1-3 cr.)				

ENG 21 or higher **OR** ENG 22/ ESL 15 or higher	Developmental Reading Introduction to Expository Writing		---	---	3
MATH 50 or higher	Technical Mathematics I		---	---	3
Cultural Environment Elective [1 COURSE REQUIRED – 3 cr.] **ART** 101, 105B, 105C, 107, 108, 111, 112, 113, 114, 115, 123, 125, 126, 202, 207, 211, 212, 217, 223, 227, 230, 238, 239, 243, 244, 269C, 294 **ASAN** 120†, 121†, 122†, **DNCE** 153, 185, 256†, 285, **ED** 256† (see DNCE 256), **ENG** 103, 204, 255, 256, 257A, 257E, **HAW** 101, 102, 103, 201, 202, **HIST** 123, 151, 152, 153, 154, 241, 242, 281, 282, 284, 288, **HUM** 100, 160† (see SSCI 160), 275, **HWST** 107, 123, 124, 125, 126, 128, 129, 130, 131, 160, 161, 205, 221†, 224, 231, 232, 235, 241, 242, 250, 251, 260, 261, 270, **IS** 55, **JPNS** 101, 102, 121, 122, **LING** 102, 121†, **PHIL** 100, 101, 102, 120, 200, 201, 211, 255, **PSY** 275, **REL** 150, 151, 152, 153, **SPCO** 231, 251		---	---	3
Natural Environment Elective [1 COURSE REQUIRED – 3 cr.] **AG** 54B, 122, 141, 175-175L, 200, 250, 260, **ASTR** 110, **BIOC** 241, **BIOL** 100-100L, 101-101L, 141-141L, 142-142L, 156-156L, **BOT** 101-101L, 130-130L, **CHEM** 100-100L, 151-151L, **FSHN** 185, **GEOG** 101-101L, 122, 170-170L, 180-180L, **GG** 101-101L, **ICS** 100, **MICR** 130-130L, **OCN** 201, 205, **PHRM** 203, **PHYS** 25, 50, 55, 56, 100-100L, **SCI** 20, 51, 124-124L, 222, **ZOOL** 101-101L		---	---	3
Social Environment Elective [1 COURSE REQUIRED – 3 cr.] **AJ** 101, 180, 210, 280, 290B, 290C, 290D, **ANTH** 121, 150, 200, **ASAN** 120†, 121†, 122†, **BUS** 71, **ECON** 20, 50, 120, 130, 131, **ED** 105, 131, **FAMR** 230, **GEOG** 102, **HD** 234, **HSER** 110,140, 245, 248† (see SUBS 248), **HWST** 221†, **LAW** 30, **MGT** 20, 24, **POLS** 110, **PSY** 100, 170, 214, 230, 275, **SOC** 100, 208, 218, 251, 289, 290, **SPCO** 51, 130, 151, 260, **SSCI** 25, 45, 60, 111, 150, 160† (see HUM 160), 250, **SUBS** 248† (see HSER 248), 268, 270, 275, **WS** 151		---	---	3
	Total Credits:	***20***	***38***	***71***

Courses completed that do not apply to major

Course	Sem., Yr. & Grade	Course	Sem., Yr. & Grade

† These courses are cross-listed but will only count once for graduation requirements.

NAME _____ SEMESTER/YEAR BEGAN_____

HAWAII COMMUNITY COLLEGE, 2006-2007
Machine, Welding and Industrial Mechanics Technologies (MWIM) and MACHINE TECHNOLOGY OPTION

Program Requirements (AAS Overall [71 credits, cumulative GPA 2.0 required from all courses])
(CA Overall [36 credits, cumulative GPA 2.0 required from all courses])
(CC Overall [20 credits, cumulative GPA 2.0 required from all courses])

Course	Course Name	Semester, Year & Grade	Credits CC	CA	AAS
FALL:					
MACH 20	Intro to Machine Technology		1	1	1
MACH 21	Measurement and Layout		1	1	1
MACH 22	Hand tools and Benchwork		1	1	1
MACH 23	Basic Machine Tools		1	1	1
WELD 26	Basic Arc Welding		---	2	2
WELD 27	Metalworking Lab I		---	2	2
WELD 28	Metalworking		---	2	2
WELD 29	Oxy-fuel Weld, Braze and Cut		---	2	2
SPRING:					
MACH 24	Lathe Facing, Turning and Knurling		2	2	2
MACH 25	Lathe Shape and Altering and Tapering		2	2	2
WELD 24	Measurement and Layout		---	2	2
WELD 25	Metal Fab I, Sheet Metal		---	2	2
WELD 31	Intermediate Welding		---	2	2
WELD 40	Qualification Procedures		---	2	2
BLPR 30D	Blueprint Reading for Machine Trades		---	3	3
FALL:					
MACH 26	Lathe II		6	6	6
BLPR 30B	Blueprint for Welders		---	3	3
ELECTIVES	WELD OR MACH Electives		---	---	6
SPRING:					
MACH 27	Vertical Milling and Intro to CNC		4	---	4
MACH 28	Shaper, Line Bore, Lathe and Drill		2	---	2
ELECTIVES	WELD or MACH Electives		---	---	8
WELD 93V (Optional)	Cooperative Vocational Education		---	---	1-3
ENG 21 or higher **OR** ENG 22/ ESL 15 or higher	Developmental Reading Introduction to Expository Writing		---	---	3
MATH 50 or higher	Technical Mathematics I		---	---	3

Cultural Environment Elective [1 COURSE REQUIRED – 3 cr.] **ART** 101, 105B, 105C, 107, 108, 111, 112, 113, 114, 115, 123, 125, 126, 202, 207, 211, 212, 217, 223, 227, 230, 238, 239, 243, 244, 269C, 294 **ASAN** 120†, 121†, 122†, **DNCE** 153, 185, 256†, 285, **ED** 256† (see DNCE 256), **ENG** 103, 204, 255, 256, 257A, 257E, **HAW** 101, 102, 103, 201, 202, **HIST** 123, 151, 152, 153, 154, 241, 242, 281, 282, 284, 288, **HUM** 100, 160† (see SSCI 160), 275, **HWST** 107, 123, 124, 125, 126, 128, 129, 130, 131, 160, 161, 205, 221†, 224, 231, 232, 235, 241, 242, 250, 251, 260, 261, 270, **IS** 55, **JPNS** 101, 102, 121, 122, **LING** 102, 121†, **PHIL** 100, 101, 102, 120, 200, 201, 211, 255, **PSY** 275, **REL** 150, 151, 152, 153, **SPCO** 231, 251		---	---	3
Natural Environment Elective [1 COURSE REQUIRED – 3 cr.] **AG** 54B, 122, 141, 175-175L, 200, 250, 260, **ASTR** 110, **BIOC** 241, **BIOL** 100-100L, 101-101L, 141-141L, 142-142L, 156-156L, **BOT** 101-101L, 130-130L, **CHEM** 100-100L, 151-151L, **FSHN** 185, **GEOG** 101-101L, 122, 170-170L, 180-180L, **GG** 101-101L, **ICS** 100, **MICR** 130-130L, **OCN** 201, 205, **PHRM** 203, **PHYS** 25, 50, 55, 56, 100-100L, **SCI** 20, 51, 124-124L, 222, **ZOOL** 101-101L		---	---	3
Social Environment Elective [1 COURSE REQUIRED] **AJ** 101, 180, 210, 280, 290B, 290C, 290D, **ANTH** 121, 150, 200, **ASAN** 120†, 121†, 122†, **BUS** 71, **ECON** 20, 50, 120, 130, 131, **ED** 105, 131, **FAMR** 230, **GEOG** 102, **HD** 234, **HSER** 110,140, 245, 248† (see SUBS 248), **HWST** 221†, **LAW** 30, **MGT** 20, 24, **POLS** 110, **PSY** 100, 170, 214, 230, 275, **SOC** 100, 208, 218, 251, 289, 290, **SPCO** 51, 130, 151, 260, **SSCI** 25, 45, 60, 111, 150, 160† (see HUM 160), 250, **SUBS** 248† (see HSER 248), 268, 270, 275, **WS** 151		---	---	3
	Total Credits:	*20*	*36*	*71*

Courses completed that do not apply to major

Course	Sem., Yr. & Grade	Course	Sem., Yr. & Grade

† These courses are cross-listed but will only count once for graduation requirements.