HAWAI`I COMMUNITY COLLEGE
PROGRAM REVIEW REPORT

Machine, Welding and Industrial Mechanics (MWIM)
Technology Program

November 26, 2008

Assessment Period: July 1, 2005 to June 30, 2008

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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 Technology Program
2007-2008

A. Program Effectiveness

1. Write a brief narrative describing the program and how it supports the College's mission and imperatives.

   The MWIM Tech Program accepts all students from all segments of our community that meet the Hawai'i Community College's (HawCC) open-door requirements. It is an open-entry/exit program that prepares students for multiple occupations offering two (2) Certificates of Completion, two (2) Certificates of Achievement, and (2) Associate of Applied Science degrees. With the continual restructuring, this program will be offering courses and certificates for installation, maintenance, and repair type occupations. The Program prepares students with the technical and employability skills and knowledge required for the machine, welding and industrial mechanics occupations which are in alignment with the College's imperative of Workforce Development. With an open-entry/exit structure Cultural Competency is paramount. As part of the curriculum students are made aware of hazardous materials and are sensitive to the environment. The curriculum provides the students the opportunity to use current technology used in industry. The students are provided opportunities to serve their communities by fabricating items which are then donated for fundraising purposes.

   Attach a current Program Map as **Appendix A**.

2. Attach the program's current Assessment Plan as **Appendix B**.

3. As a result of a review of program courses and curricula, (summarize) what changes have been made and why?

   The MWIM Tech Program continues to evolve. Two tenured-track instructors were hired. Laboratory work stations have been equipped with "plug-in" set-up and take-down capabilities to allow sections of the lab space to be used for multiple activity training. Rubrics are being used to assess student learning.

4. Program Strengths and Weaknesses

Briefly describe the program's strengths and weaknesses to include: 1) an analysis of data elements (see **Table 5)**--demand, efficiency, and effectiveness; 2) perceptions of the program's progress on assessment of Program Learning Outcomes (PLO's); 3) and any other pertinent information.

- The overall program health is Cautionary.
- Demand based on new and replacement positions in the county is weak showing only 6 positions available and the number of majors in fall 2007 is 28. This gives a ratio of 4.7 majors to 1 position which places the demand indicator in a Cautionary health. Strong industry support suggests a higher demand for graduates from this Program more than is indicated by the county statistics.
- All the statistics used to determine efficiency increased favorably. The efficiency of the program is deemed Healthy with a fill rate of 90% and a ratio of majors/FTE BOR Appointed Faculty of 28.
- The persistence from fall to spring is 71.43%, a slight 7.74% decrease from fall 2006. This falls in the Cautionary level. The number of degrees earned in 2007 (5) compared to the number of majors (28) is Cautionary; however, the number of degrees earned in 2007 (5) compared to the number of new & replacement positions (6) is Healthy. Not all students enter this Program to seek a degree and thus the cautionary persistent rate and low number of majors. This Program also provides advance skills training for people in industry, opportunities to increase individual employment potential, and personal enrichment.

Program Strengths (S1, etc.) and Weaknesses (W1, etc.)
Enumerate, do not rank, the top strengths and the worst weaknesses (3 each is recommended).

S1…The MWIM Tech Program has an excellent Advisory Council and maintains good relationships with the industries it serves.
S2…The Program has a dedicated facility (building 324).
S3…The Program offers its courses at times convenient for the clientele they serve.
W1..The Program restructuring is not complete. The Industrial Mechanics/Maintenance portion of the curriculum has to be expanded to include refrigeration and air conditioning, boiler operation and control hydraulics and pneumatics, metallurgy, plumbing, and industrial maintenance.
W2...Some of the equipment and supplies are antiquated and inadequate. In addition basic teaching needs like whiteboards/chalkboards, audiovisual equipment, classroom furniture, and computers are inadequate.
W3...The facility (building 324) needs major maintenance work to repair the damages of continuous acid rain, re-roofing, changing gutter systems.

Equipment that are a part of the facility need service and repair. Internet connection is inadequate.

B. Action Plan for Program Improvement

Complete Tables 1-4 and provide justification for program budget requests:

Table 1—Top 6 Non-Cost Items (add rows as needed; examples given)

Task:	Academic yr.	Who is responsible	Best Fits which ADP Goal*	Addresses which strength or weakness
1.Revise program learning outcomes to be validated by industry	2009-10		B,C	S1, W1
2.Develop industrial mech curriculum & submit to CRC	Spring 2009	Program Coord.	C,E	
3.Institute industrial mechanics course offerings	Fall 2009	Program Coord.	C,E	
4.Expand course offerings as equipment/trainers become available	Spring 2010	Program Coord.	C,E	
5.Continuously evaluate/modify MWIM curriculum			C,E	
6.Continuously communicate with industry partners			C,E	
7. Begin to develop Automotive Machining Courses	Spring 2010	Program Coord.	C,E	
Develop Partnership w/ DOE Robotics	Summer 2010	Program Coord.	C,E	

Develop Partner Ship to train Techs in Indus. Mechanics	Spring 2009	Program Coord.	C	

Key to abbreviations:
***ADP Goal s are: A, B, C, D, E**
Strengths/Weaknesses are numbered (S1, S2… W1, W2…--from A.4.)

Table 2 —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 ADPGoal*	Addresses which strength or weakness
1.Furnish RAC/Mech Lab	2009-10	Program Coord.	$650K, Eq	C,E	
2.Purchase startup supplies/small tools for RAC/Mech Lab	2009-10	Program Coord.	$30K, S1X	C	
3.Hire 1 FTE faculty to teach RAC/Industrial Mechanics	2009-10	Program Coord.	$50K, P	A,C	
4.Furnish two faculty offices	2009-10		$8K, S1X	C,E	
5.Furnish classroom/Lab	2009-10		$10K, E	C,E	
6.Increase supply budget	2009-10		$8K, SE	C,E	

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.4)

Table 3.--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 3 ton overhead crane	Building 324
Service/Repair Forced Air Ventilation systems (7ea)	Building 324
Service/Repair Air Compressor	Building 324
Service/Repair Roll-Up Doors	Building 324

Table 4—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/Feeder & Gun	E	1 each year: 2009, 10, 11, 12, 13	$7K each Total cost: 5 yrs=$30K
(1989 Oxy/Acet Manifold system, Weld, Braze	E	2010	$7K
3 PCs and connect Fiber Optics	CP	2010	
Expansion of Eave to accommodate new RDP equipment	E	2009	10K
CNC Milling Machines Controls	E	1 each year, 2009,2010,2011	15K each Total cost 3 yrs=45K
Oxy/Acet Portables Tanks and Tip system	CP	4 each year 2009,2010,2011	5K each year Total 15K

Key to abbreviations:

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

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

C. Table 5—Data Elements

Annual Report of Program Data for Machine, Welding & Industrial Mech Tech
HAW CC Program Major(s): MWIM, WELS, MST

Demand Indicators			Fall of Year		
			2005	2006	2007
1	New & Replacement Positions (State)		21	21	56
2	New & Replacement Positions (County)		3	3	6
3	Number of Majors		21	24	28
4	SSH Program Majors in Program Classes		192	182	231
5	SSH Non-Majors in Program Classes		90	88	46
6	SSH in All Program Classes		282	270	277
7	FTE Enrollment in Program Classes		18.80	18.00	18.47
8	Number of Sections Taught		10	12	12

Demand Health
Cautionary

Efficiency Indicators			Fall of Year		
			2005	2006	2007
10	Average Class Size		14.40	11.25	12.00
11	Fill Rate		83.72	72.58	90.00
12	FTE BOR Appointed Faculty		1.00	1.00	1.00
13	Majors / FTE BOR Appointed Faculty		21.00	24.00	28.00
14	Majors / Analytic FTE Faculty		13.13	12.00	14.00
14a	Majors / Analytic FTE Faculty @ 12 cr.		10.50	9.65	11.26
15	Program Budget Allocation ('07 @ 12cr.)		$80,780.00	$99,460.00	$125,757.50
16	Cost per SSH ('07 @ 12cr.)		$296.99	$368.37	$454.00
17	Number of Low-Enrolled (<10) Sections		2	4	4

Efficiency Health
Healthy

Effectiveness Indicators			2005	2006	2007
19	Persistence (Fall to Spring)		57.14	79.17	71.43

20a	Number of Degrees Earned (Annual)*	0	3	5
20b	Number of Certificates of Achievement Earned (Annual)*	0	4	0
21	Number Transferring (to UHM, UHH, UHWO)	0	0	0
	Perkins - Campus Actual **			
22	1P1 Academic Achievement	83.33	60	100
23	1P2 Vocational Achievement	100	83.33	100
24	2P1 Completion	40	16.67	42.86
25	3P1 Placement Employment/Education	0	100	50
26	3P2 Retention Employment	0	50	100
27	4P1 Non Traditional Participation	14.29	4.55	8.7
28	4P2 Non Traditional Completion	50	0	0
	Perkins - State Standards **			
22	1P1 Academic Achievement	81.81	81.92	81.87
23	1P2 Vocational Achievement	90.00	90.00	90.42
24	2P1 Completion	36.00	37.33	38.17
25	3P1 Placement Employment/Education	71.00	71.72	71.07
26	3P2 Retention Employment	90.00	92.00	92.00
27	4P1 Non Traditional Participation	14.81	14.60	14.60
28	4P2 Non Traditional Completion	12.86	12.73	12.19
29	Faculty FTE Workload @ 12 cr	2	2.49	2.49

Effectiveness Health

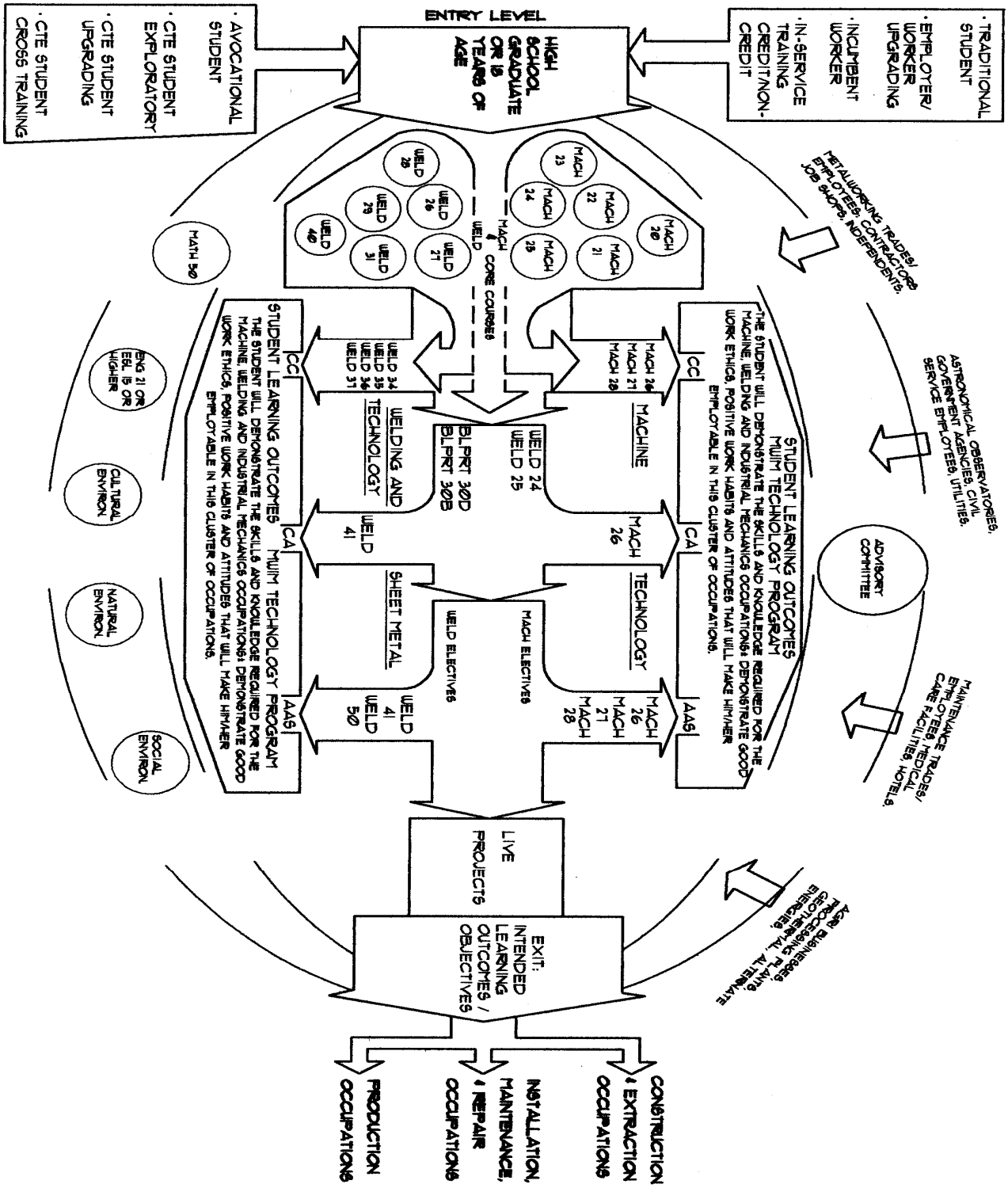
Cautionary

Overall Program Health	**Cautionary**

***All degrees and certificates are counted based on fiscal year.**

**** Perkins data are for CTE programs only. From report on 2006-2007 Perkins activity year**

Appendix A
Program Map



Appendix B
Program Assessment Plan

Hawai'i Community College

Instructional Program Assessment Plan For Learning Outcomes

(AAS Degree) – Machining Technology (MWIM- Machine, Welding, and Industrial Mechanics)

Submitted by: Douglas Leite, (07-15-08)

Semester: Fall 2008
Student Learning Outcome (program level) for Assessment* (taken from Appendix):

SLO #4 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.

Step 1. Identify the artifact(s) (i.e., student work) for assessment and course(s) from which selected:

Acme threaded shaft with knurled handle

Step 2. Develop the assessment tool (e.g., rubric) to be used with 4 levels of assessment, if applicable—Level 1=Unsatisfactory; Level 2=Fair; Level 3 = Good Level 4=Excellent. Attach the assessment tool.

See attached: Acme Threaded Nut and Shaft with Knurled Handle

Step 3. Set the Performance Rate: Will/Should be done within the allotted time frame and to industry standards.

80% of the artifacts assessed by the Assessment Team will result with "Excellent" or "Good" performance ratings

Step 4. Describe the method used to collect the artifacts:

Where or from whom artifacts will be collected: **Students enrolled in MACH 26**
When will artifacts be collected: **fall 2008 to be assessed in spring 2009**

Step 5. Describe the sampling method used to collect the data:

All students enrolled in MACH 26 will machine an acme threaded shaft with a knurled handle. To provide evidence of the intended outcome, 80% of the pieces will be randomly selected to be assessed in Spring 2009.

Step 6. Describe the composition of the Assessment Team (AT) (add more rows as needed):

Evaluator(s):
1 MWIM other instructor
2 Former faculty or professional machinist
3 Advisory council member or past graduate

Step 7. The Assessment Team uses the assessment tool(s) (e.g., rubric) to evaluate the data.

Step 8. The Program will summarize and interpret the results, and determine the implications for program improvement. Note: a summary will be included in the comprehensive program review.

*note: one form will be submitted for each student learning outcome that is assessed

Assessment Plan to be sent electronically to the Vice Chancellor for Academic Affairs for posting on the internet

Appendix
(A.A.S. MWIM)

Student Learning Outcomes (program level) (add more rows as needed):

PROGRAM STUDENT 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.

SPECIFIC LEARNING OUTCOMES:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. Demonstrate an awareness of our cultural, social and natural environment and be a contributing member of our community.

Matrix of Student Learning Outcomes (program level) by Course (add more columns and rows as needed)

COURSE	**SLOS***						
	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5	SLO 6	SLO 7
MACH 20		X		X		X	
MACH 21	X	X		X		X	
MACH 22	X	X		X		X	
MACH 23	X	X	X	X		X	
MACH 24	X	X	X	X		X	
MACH 25	X	X	X	X		X	
MACH 26	X	X	X	X		X	
MACH 27	X	X	X	X		X	
MACH 28	X	X	X	X		X	
WELD 24	X	X	X	X		X	
WELD 25	X	X	X	X		X	
WELD 26	X	X	X			X	
WELD 27	X	X	X	X		X	
WELD 28	X	X	X	X		X	
WELD 29	X	X	X	X		X	
WELD 31	X	X	X			X	
WELD 40	X	X	X			X	

Student Learning Outcomes (program level) to be assessed for each year of the program review cycle. Identify the learning outcomes by number only taken from above

Fall semester				**Spring semester**	
Year 1 (2008/09)	SLO #4			SLO #3	
Year 2 (2009/2010)	SLO #2	SLO #1		SLO #5	SLO #6
Year 3 (2010/2011)	SLO #7				
Year 4 (2011/2012)					

Subject: MACH 26
Project: Acme Threaded Nut and Shaft with Knurled Handle

Topic/Skill: To do the mathematical calculations and machine work necessary to manufacture an Acme threaded nut to fit an Acme threaded shaft and knurl handles on each piece.

Lesson/Project: Using accepted machining formulas, calculate the necessary, pitch diameter, root diameter, best wire size, diameter over wires and thread relief dimensions necessary to accomplish project.

Learning: To use the the Machinery's Handbook and the Machine Tool Practices textbook to acquire the formulas and procedures necessary to accomplish tasks.

Intended Outcome: 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.

Criteria	**Quality**				
Shaft portion	**4-Excellent**	**3-Good**	**2-Fair**	**1-Unsatisfactory**	**Score**
Overall length	Exact	Size +.005/-.005	Size + or - 1/64"	Anything beyond + or - 1/64"	
Length of threaded area	Exact	Size +.005/-.005	Size + or - 1/64"	Anything beyond + or - 1/64"	
Width of thread relief	Exact	Size +.005/-.005	Size + or - 1/64"	Anything beyond + or - 1/64"	
Diameter of thread relief	Exact	Size +.001/-.002	Size +.001/-.004	Sizes beyond +.002/-.005	
All chamfers in place	All 4	Three only	Two, only	One or none	
Pitch diameter of thread correct	Correct	Size +.001/-.002	Size +.001/-.004	More than +.002 or -.005	
Best wire size calculations correct	Correct			Incorrect	
Appearance of thread flanks	Clean cut	15% gouged or rough	40% gouged or rough	50% gouged or rough	
Quality of Knurl pattern	Clean and defined	Slight overrun or overcut	40% overrun or overcut	50%& overrun or overcut	
				Total score for shaft	
Nut Portion					
Overall length	Exact	Size +.005/-.005	Size + or - 1/64"	Anything beyond + or - 1/64"	
Inside diameter before threading	Size +.000/+.001	Size +.002/-.001	Size +.004/-.001	Sizes beyond +.005/-.002	
Fit between pieces	Equal to a #3 fit (good,smooth)	Equal to a loose #3 fit	Equal to a #2 0r #4 fit	Too loose orbinding tight	
Appearance of thread flanks	Clean cut	15% gouged or rough	40% gouged or rough	50% gouged or rough	
Quality of Knurl pattern	Clean and defined	Slight overrun or overcut	40% overrun or overcut	50%& overrun or overcut	
				Total Score for nut	