

**College of the Redwoods  
Manufacturing Technology Advisory Committee  
Agenda**

Wednesday, April 17, 2013  
4:00-5:00 PM

Eureka Main Campus Room AT133 (Machine Tool Laboratory)

1. Welcome and Introductions
  - a. Ms. Jennifer Carpenter – MT Advisory Committee Chair
2. State of the MT Program Report – Mr. Mike Peterson
  - a. Validation of MT Learning Outcomes
  - b. Completer Survey
  - c. ATMAE Accreditation
3. State of the MT Laboratory Report – Mr. Nick Shull
  - a. CTEA projects
4. Industry Trends and Employment
5. Industry Recommendations for Program Improvements
6. Announcements and Other

**College of the Redwoods  
Manufacturing Technology Advisory Committee  
Meeting Minutes**

Friday, March 2, 2012  
6:00-7:00 PM

Eureka Main Campus Room AT133 (Machine Tool Laboratory)

1. Welcome and Introductions

The meeting was called to order at 6:10 PM

Committee members present:

Steve Brown	College of the Redwoods
Bruce Hamilton	Wildwood Manufacturing
Bryan Hubbell	College of the Redwoods
Suk Choo Kim	CPR Aquatic Inc.
Jennifer Knight	College of the Redwoods
Kathy Miller	Humboldt County Office of Education
Mike Peterson	College of the Redwoods
Julia Peterson	College of the Redwoods
Darran Sandars	Wildwood Manufacturing
Aletta SauAr	South Fork High School/APICS
Nick Shull	College of the Redwoods
Dave Stevens	Humboldt Regional Occupational Program/Eureka High School
Danny Walker	College of the Redwoods
Robert Yeager	Marimba One

2. Advisory Committee Structure

Jeff Cummings, the new Dean of Career and Technical Education (CTE) at the College of the Redwoods (CR) had asked all CTE programs to implement new guidelines for effective advisory committees. These guidelines include having 15 to 20 solid committee members serving two year terms, at least half of the committee should be from industry, and the committee chair will be a member from industry. We will also develop an advisory committee handbook detailing the guidelines and procedures. The Manufacturing Technology (MT) Advisory Committee members were asked to consider leading the committee next year and to assist the faculty in adding new committee members. MT program faculty will provide support to the industry chair to reduce the amount of time required for this important role.

3. Report on Accreditation, ACCJC and ATMAE

The Accrediting Commission for Community and Junior Colleges (ACCJC) has placed the CR on sanction. "Show Cause" is the most severe sanction within the range of

actions that the ACCJC can take. This sanction is not a reflection of the quality of education or the student experience at the CR, it is related to planning and how we document the assessment of our learning outcomes. Now more than ever, as we face ACCJC sanctions and budgetary issues, program advisory committees will play an essential role. Advisory committee members may be called upon to support programs perhaps by appearing at public meetings and signing letters of support.

The MT program at the CR will seek external accreditation through the Association of Technology, Management, and Applied Engineering (ATMAE). This will involve completing a self-study document in the Fall 2012 semester followed by a site visit by an ATMAE team. The CR already has external accreditation through ATMAE for the Drafting Technology and Construction Technology programs. Pursuing accreditation for this additional program will not cost the college more money in fees paid to ATMAE because the one fee currently paid covers as many programs as are applicable. When the visiting team from ATMAE is here, they will want to interview advisory committee members.

#### 4. Course Outcomes and Program Outcomes

The committee member packet included two documents, *MT Certificate and Degree Learning outcomes by Course Number*, and *MT Certificate and Degree Learning outcomes*. The committee was asked to evaluate these outcomes and respond in the future as to whether these learning outcomes are appropriate. The committee is invited to suggest new learning outcomes for the program as well as suggest eliminating current learning outcomes as needed.

Assessing how well our students are learning material based on these outcomes is crucial for the continuous improvement of the program. Various methods of assessing student learning have been implemented in the MT program. The MT advisory committee will evaluate our assessment methods and suggest new methods for assessing learning outcomes. MT program faculty plan to initiate email discussions within the committee regarding learning outcomes and assessment of the learning outcomes in late April to prepare for the next committee meeting in the Fall 2012 semester.

#### 5. CTEA Projects

Each year, the MT program is eligible to participate in funding from the Carl D. Perkins Career and Technical Education Improvement Act (CTEA). Additionally, there are other grant funds available for CTE programs. Last year the MT program purchased a new rapid prototyping machine as well as Computer Numerical Control (CNC) control simulators. The committee suggested improving the program by purchasing a CNC turning center with live tooling, hiring a technician and purchasing parts to get our plastic injection molding machine running, and purchasing new metallurgical laboratory equipment.

## 6. Employment Outlook, Hiring Needs

It was evident from the discussion that the MT advisory committee at the CR feels strongly that the manufacturing industry is gaining momentum and there will be many jobs available in the future. Outsourcing to offshore countries is becoming more and more expensive and this trend will cause more companies to do manufacturing in the U.S.

## 7. Industry Recommendations for Program Needs and New Technology

The committee generally supported purchasing new technology as noted in item #5 above. The plastic injection molding machine has been non-operational since it was purchased many years ago. Adding this technology to our program is a relevant improvement and should be a priority.

CNC machine repair and maintenance is a skill set that employers see value in. This includes knowledge of troubleshooting complex electronic and mechanical systems.

A notable comment from the committee was that it is not necessarily training in a piece of equipment or new technology that employers need in their employees. Local manufacturing companies need employees that are problem solvers and have strong work ethics. Soft skills and attitude can be more important than skills in specific technology.

## 8. Announcements and Other

The Humboldt County Student Business Challenge contest, Economic Fuel has deadlines approaching later in March. More MT students at the CR should get involved in Economic Fuel so those with entrepreneurial ambitions can develop business plans and potentially earn start-up capital to start their own business.

We plan to have virtual discussions on learning outcomes and program support via email in the coming months. The next MT Advisory Committee meeting will be in the Fall 2012 semester.

Several members of the committee were not able to attend this meeting but did express interest in participation in future meetings.

The meeting was adjourned at 7:20 PM.

Committee Membership List

<b>Name</b>	<b>Title</b>	<b>Agency or Company</b>	<b>Representing</b>
Steve Brown	Professor, Drafting Technology	College of the Redwoods	College Faculty
Jenifer Carpenter	Mechanical Designer	Wing Inflatables	Industry
Jeff Cummings	Dean, Career and Technical Education	College of the Redwoods	College Administration
Jacqueline Debets	Economic Development Coordinator	County of Humboldt	Workforce Investment Board
Don Ehnebuske	Business Advisor	Azalea Business Support	Industry
Dave Enos	Teacher	McKinleyville High School	Secondary School Faculty
Barbara Groom	CEO	North Coast Brewery	Industry
Bert Hafar	Associate Faculty	College of the Redwoods	College Faculty
Bruce Hamilton	CEO	Wildwood Manufacturing	Industry
Mike Hislop	Chief Investigator	Humboldt County District Attorney's Office	Industry
Bryan Hubble	Student	College of the Redwoods	College Students
Susi Huschle	HROP Counselor	Humboldt County Office of Education	Humboldt County
Roger Kelly	General Manager	JR Stephens Co.	Industry
Suk Choo Kim	CEO	CPR Aquatic Inc.	Industry
Jennifer Knight	Advisor	College of the Redwoods	College Staff
Kathy Miller	Economic Fuel Coordinator	Humboldt County Office of Education	Humboldt County
Jerry Murray	Associate Faculty	College of the Redwoods	College Faculty
Mike Nearat	Business Counselor	SBDC	Industry
Mike Peterson	Professor, Manufacturing Technology	College of the Redwoods	College Faculty
Julia Peterson	Director, Small Business Training Center	College of the Redwoods	College Management
Pru Ratliff	CTE Grants Manager	College of the Redwoods	College Management
Darran Sandars	Machine Operator	Wildwood Manufacturing	Industry
Aletta SauAr	Teacher	South Fork High School/APICS	Secondary School Faculty
Nick Shull	Associate Faculty	College of the Redwoods	College Faculty
Dave Stevens	Teacher	Eureka High School	Secondary School Faculty
Danny Walker	Assistant Professor, Welding Technology	College of the Redwoods	College Faculty
Robert Yeager	Machine Operator	Marimba One	Industry



**Definitions**

**FTES:** Full-Time-Equivalent Students. One FTES represents 525 class (contact) hours in the school year (based on 3 hours per day, for 175 days of instruction). The number of FTES is calculated by dividing total class (contact) hours of all students by 525.

**FTEF:** Full-Time-Equivalent Faculty. One FTEF represents 45 teaching load units (TLUs) during the academic year. The number of FTEF is calculated by dividing the total TLUs of all faculty (full- and part-time) by 45.

**For the Manufacturing Technology / Computer Electronic Technology Program Review Code**

**2.8 Faculty and Full-Time Equivalent Data**

Review the FTES per FTEF ratios for your program. This ratio found by dividing the total number of Full-Time-Equivalent Students by the total number of Full-Time-Equivalent Faculty.

Increased FTES (higher enrollment per section) increases the FTES per FTEF ratio; Increased FTEF (more TLUs) decreases the ratio.

>Comment in section 2.8 of the template on how your program compares to the district.  
Please contact Institutional Research if you'd like help interpreting this data set.

**FTES and FTEF summary**

	2010 - 2011			2011 - 2012		
	FTES	FTEF	FTES per FTEF	FTES	FTEF	FTES per FTEF
District	5,278.67	181.28	29.12	4,892.83	171.57	28.52

	2010 - 2011			2011 - 2012		
	FTES	FTEF	FTES per FTEF	FTES	FTEF	FTES per FTEF
Program	25.39	1.13	22.40	26.42	1.43	18.43
Computer and E	0.00	0.00	0.00	1.87	0.10	18.70
Industrial Techno	3.72	0.20	18.60	0.00	0.00	0.00
Manufacturing Te	21.67	0.93	23.22	24.55	1.33	18.41

**FTEF by Teaching Arrangement**

	2010 - 2011			2011 - 2012		
	Full-Time Faculty	Part-Time Faculty	Total	Full-Time Faculty	Part-Time Faculty	Total
District	89 49%	92 51%	181.28 100%	87 51%	84 49%	171.57 100%

	2010 - 2011		2011 - 2012		
	Full-Time Faculty	Total	Full-Time Faculty	Part-Time Faculty	Total
Program	1.13 100%	1.13 100%	1.13 79%	0.30 21%	1.43 100%
Computer and Electronics		0.00 0%		0.10 100%	0.10 100%
Industrial Technology	0.20 100%	0.20 100%			0.00 0%
Manufacturing Technology	0.93 100%	0.93 100%	1.13 85%	0.20 15%	1.33 100%

**College of the Redwoods**  
**Manufacturing Technology (MT) Program**  
**MT Certificate and Degree Program Learning Outcomes (PLOs)**

1. Set up and operate manual machine tools including milling machines, lathes, precision grinders, Electrical Discharge Machines, and support equipment including drill presses, grinders, and saws.
2. Set up and operate Computer Aided Manufacturing systems and Computer Numerical Control machine tools, including machining centers, turning centers, and rapid prototyping machines.
3. Produce machine parts from engineering drawings within dimensional tolerances.
4. Determine the best way to manufacture a given part, and produce it utilizing the available tools and equipment.
5. Produce industry-standard design documentation using Computer Aided Drafting (CAD) and technical sketching.

**College of the Redwoods  
Manufacturing Technology (MT) Program  
Student Learning Outcomes (SLOs) by Course Number**

**MT 10 Fundamentals of Manufacturing Technology:**

- #1** Use Appropriate measuring tools to Industry Standards.
- #2** Use layout tools to accurately produce a machined part.
- #3** Distinguish the correct tool and safely and correctly set-up and operate various machine tools using accurate speed and feed calculations.

**MT 11 Intermediate Manufacturing Technology:**

- #1** Complete various common lathe operations to prescribed tolerances.
- #2** Correctly calculate information needed to manufacture and manufacture unified, acme, multiple lead, and metric threads.
- #3** Determine appropriate use of the surface grinder with accuracy based on project parameters.

**MT 12 Advanced Manufacturing Technology:**

- #1** Safely and accurately set-up and operate vertical and horizontal milling machines.
- #2** Perform the proper calculations and setups when using industrial indexing systems.
- #3** Make the proper calculations for manufacturing and manufacture various gear types.

**MT 13 Manufacturing Technology Capstone:**

- #1** Program, set-up, and operate four and five axis machine tools using standard industry practices.
- #2** Perform the calculations, set-up, and operate EDM machines.
- #3** Program, set-up, and operate the rapid prototyping machine and the laser cutter/engraver.

**MT 52 Ferrous Metallurgy:**

- #1** Understand the terms and processes of ferrous and nonferrous metals as well as the use of other materials of modern industry.
- #2** Set up, run, and document tensile strength tests, the Metcalf's experiment, and microscopic examination of polished, etched metal specimens.



### **MT 54A Introduction to Computer Numerical Control:**

- #1** Program, set-up, and operate three axis CNC vertical mills according to industry standards.
- #2** Manually operate CNC machine tools to given tolerances.
- #3** Write computer programs using current machine tool language to accurately control CNC machine tools.

### **MT 54B Computer Numerical Control Machining:**

- #1** Create efficient CNC program files that save time and minimize tool wear.
- #2** Revise CNC programs to maximize efficiency and reduce run time.
- #3** Produce CNC program files as per instructor's assignments.
- #4** Manufacture repeatable machine parts that fall within dimensional tolerances from standard engineering drawings.
- #5** Research and report on current topics in CNC machining.

### **MT 54L Numerical Control Lab:**

- #1** Manufacture CNC machining projects under instructor's supervision.
- #2** Research and present current topics in CNC.

### **MT 59A MasterCam 2-D Programming:**

- #1** Create MasterCam files that represent machined objects.
- #2** Produce machining simulations and CNC programs per instructor's assignments.
- #3** Research and report on current topics regarding CAM systems and CNC machining.

### **MT 59B MasterCam 3-D Programming:**

- #1** Create Mastercam programs, incorporating wireframe, surface, and solid models for multi-axis machining.
- #2** Plan machining operations, select tooling, set parameters, and process Mastercam-generated parts, utilizing computers and CNC machine tools.

### Survey Response Rate

Area	Response Rate	Responded	Mailed	Bounced
<b>Welding Technology</b>	<b>0%</b>	<b>0</b>	<b>2</b>	<b>0</b>
<i>Welding Technology – Certificate</i>		0		
<b>Historic Preserve and Restore Tech.</b>	<b>52%</b>	<b>17</b>	<b>33</b>	<b>2</b>
<i>HPRT - AS</i>		8		
<i>HPRT- Certificate.</i>		5		
<i>Blank (Did not indicate a completion area)</i>		4		
<b>Construction Technology</b>	<b>53%</b>	<b>8</b>	<b>15</b>	<b>0</b>
<i>Construction Technology - AS</i>		7		
<i>Residential Construction I - Certificate</i>		1		
<i>Residential Construction II - Certificate</i>		0		
<b>Manufacturing Technology</b>	<b>20%</b>	<b>4</b>	<b>20</b>	<b>2</b>
<i>MT – AS</i>		1		
<i>MT - CADD/CAM - AS</i>		3		
<i>MT - CADD/CAM - Certificate</i>		0		
<i>MT – Certificate</i>		0		
<b>Drafting Technology</b>	<b>77%</b>	<b>20</b>	<b>26</b>	<b>0</b>
<i>DT - Architecture - AS</i>		11		
<i>DT - Architecture - Certificate</i>		1		
<i>DT - Civil Design - AS</i>		4		
<i>DT - Civil Design - Certificate</i>		2		
<i>DT - Mechanical Design - AS</i>		2		
<i>DT - Mechanical Design - Certificate</i>		0		

### CADD/CAM Design and Manufacturing - AS & CA

Area	Response Rate	Responded	Mailed	Bounced
<b>Manufacturing Technology</b>	<b>20%</b>	<b>4</b>	<b>20</b>	<b>2</b>
<i>MT – AS</i>		<i>1</i>		
<i>MT - CADD/CAM - AS</i>		<i>3</i>		
<i>MT - CADD/CAM - Certificate</i>		<i>0</i>		
<i>MT – Certificate</i>		<i>0</i>		

### Manufacturing Technology- AS

	Strongly agree
Set-up and operate manual machine tools including milling machines, lathes, precision grinders, Electrical Discharge Machines, and support equipment including drill presses, grinders, and saws	100% (1)
Set-up and operate Computer Aided Manufacturing systems and Computer Numerical Control machine tools including machining centers, turning centers, and rapid prototyping machines	100% (1)
Produce machine parts from engineering drawings within dimensional tolerances	100% (1)
Determine the best way to manufacture a given part and produce it utilizing the available tools and equipment	100% (1)

### CADD/CAM Design Manufacturing - AS & CA

	Strongly agree	Somewhat agree
Set-up and operate manual machine tools including milling machines, lathes, precision grinders, and support equipment including drill presses, grinders, and saws	67% (2)	33% (1)
Set-up and operate Computer Aided Manufacturing systems and Computer Numerical Control machine tools	67% (2)	33% (1)
Produce machine parts from engineering drawings within dimensional tolerances	67% (2)	33% (1)
Determine the best way to design and manufacture a given part and produce it utilizing the available tools and equipment	67% (2)	33% (1)
Produce industry standard design documentation using Computer Aided Drafting and technical sketching	100% (3)	

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Use common business communication tools such as the internet, MS Office, written reports, and oral presentations. 100% (2)

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**To what extent do you agree that CR prepared you with the following general skills?**

**- Reading and writing**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	13%	75%	13%		
Drafting Technology	19	37%	42%	21%		
Historic Preserv. & Restore. Technology	14	57%	29%	7%	7%	
Manufacturing Technology	4	50%	50%			

**- Written communication**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	25%	75%			
Drafting Technology	19	37%	42%	21%		
Historic Preserv. & Restore. Technology	14	43%	50%	7%		
Manufacturing Technology	4	75%	25%			

**- Verbal communication**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	50%	13%		
Drafting Technology	19	47%	32%	21%		
Historic Preserv. & Restore. Technology	14	57%	29%	14%		
Manufacturing Technology	4	50%	50%			

**- Math**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	63%	0%		
Drafting Technology	19	26%	47%	26%		
Historic Preserv. & Restore. Technology	14	50%	29%	21%		
Manufacturing Technology	4	50%	25%	25%		

**- Problem solving**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	50%	50%			
Drafting Technology	19	58%	37%	5%		
Historic Preserv. & Restore. Technology	14	71%	29%			
Manufacturing Technology	4	50%	25%	25%		

**- Evaluating data**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	63%			
Drafting Technology	19	53%	32%	11%	5%	
Historic Preserv. & Restore. Technology	14	86%	14%			
Manufacturing Technology	4	25%	75%			

**- Scientific reasoning**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	25%	63%	13%		
Drafting Technology	19	42%	42%	16%		
Historic Preserv. & Restore. Technology	14	43%	43%	7%	7%	
Manufacturing Technology	4	75%	0%	25%		

**- Computing skills (Word, Excel,etc.)**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	50%	13%		
Drafting Technology	19	42%	32%	21%	5%	
Historic Preserv. & Restore. Technology	14	71%	21%	7%		
Manufacturing Technology	4	50%	50%			

**- Work skills (punctuality, time management, etc.)**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	25%	63%	13%		
Drafting Technology	19	58%	26%	16%		
Historic Preserv. & Restore. Technology	14	57%	29%	14%		
Manufacturing Technology	4	75%	25%			

**- Being safety-minded in the Workplace**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	75%	13%	13%		
Drafting Technology	19	70%	25%	5%		
Historic Preserv. & Restore. Technology	14	93%	7%			
Manufacturing Technology	4	50%	50%			

**- Ethical decision making**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	50%	13%		
Drafting Technology	19	37%	42%	21%		
Historic Preserv. & Restore. Technology	14	64%	14%	21%		
Manufacturing Technology	4	25%	50%	0%	25%	

**- Awareness of a diverse global community**

	Count	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Construction Technology	8	38%	38%	25%		
Drafting Technology	19	42%	42%	11%	5%	
Historic Preserv. & Restore. Technology	14	50%	36%	14%		
Manufacturing Technology	4		75%	0%	25%	

**Continuing Education or training elsewhere**

**Continue at a 2-year public a 4-year public, a technical training institute, or not at all**

	Count	No	Community College	University	Tech School
Construction Technology	8	75%		25%	
Drafting Technology	19	68%	5%	26%	
Historic Preserv. & Restore. Technology	15	80%	13%		7%
Manufacturing Technology	4	50%	25%	25%	

**Availability of jobs in your field of study**

**How would you rate the availability of jobs in your field of study?**

	Count	Very Good	Good	Poor	Very Poor
Construction Technology	8		38%	50%	13%
Drafting Technology	20	5%	55%	35%	5%
Historic Preserv. & Restore. Technology	13	31%	31%	38%	
Manufacturing Technology	4		75%		25%

### Current employment status

**- What is your current employment status?**

	Count	Employed		Unemployed	
		related to CR training	not related to CR	actively seeking employment	NOT actively seeking
Construction Technology	8	63%	13%	0%	25%
Drafting Technology	20	35%	35%	25%	5%
Historic Preserv. & Restore. Technology	15	40%	20%	7%	33%
Manufacturing Technology	4	75%	25%	0%	0%

**- State in which currently employed**

	Count	CA	OR	CO	FL	MS	OH
Construction Technology	6	83%		17%			
Drafting Technology	14	86%			7%		7%
Historic Preserv. & Restore. Technology	9	78%	11%			11%	
Manufacturing Technology	4	100%					

**-In what industry do you work?**

	Construction Technology	Drafting Technology	Historic Pres. and Rest. Technology	Manufacturing Technology
Agriculture, Forestry, Fishing and Hunting		1		
Construction	4	4	2	1
Health Care and Social Assistance	1	1		
Information		1		
Management of Companies and Enterprises				1
Manufacturing			3	1
Other Services (except Public Administration)			1	
Professional, Scientific, and Tech. Services	1	3	2	
Public Administration		1		
Retail Trade		2	1	
Utilities		1		1

### Before and After employment satisfaction

**Before CR dissatisfied students assess their employment after CR**

	BEFORE		AFTER	
	Somewhat dissatisfied	Very dissatisfied	Somewhat satisfied	Very satisfied
Construction Technology	1	1	2	
Drafting Technology	2	1	1	2
Historic Preserv. & Restore. Technology	2	1	1	2
Manufacturing Technology	1	1		2

### Job before coming to the College of the Redwoods

Area		Average hours worked/week	Months worked per year	Annual salary	Hourly salary
Construction Technology	N	6	5	5	4
	Mean	28	10	\$26,800	\$12
	Std. Deviation	7	2	\$30,087	\$4
	Minimum	20	6	\$8,000	\$8
	Maximum	40	12	\$80,000	\$16
Drafting Technology	N	12	12	8	10
	Mean	34	18	\$33,438	\$16
	Std. Deviation	7	14	\$22,878	\$11
	Minimum	24	8	\$10,000	\$8
	Maximum	45	52	\$68,000	\$42
Historic Preservation and Restoration Technology	N	9	9	5	6
	Mean	34	12	\$72,000	\$13
	Std. Deviation	10	0	\$127,826	\$5
	Minimum	15	12	\$3,000	\$5
	Maximum	40	12	\$300,000	\$20
Manufacturing Technology	N	3	3	3	2
	Mean	28	9	\$10,621	\$16
	Std. Deviation	11	4	\$4,103	\$13
	Minimum	20	4	\$6,864	\$7
	Maximum	40	12	\$15,000	\$25
Total	N	30	29	21	22
	Mean	32	14	\$37,779	\$15
	Std. Deviation	8	10	\$63,835	\$9
	Minimum	15	4	\$3,000	\$5
	Maximum	45	52	\$300,000	\$42



### Job After coming to College of the Redwoods

Area		Average hours worked/week	Months worked per year	Annual salary	Hourly salary
Construction Technology	N	6	6	5	4
	Mean	43	12	\$48,200	\$16
	Std. Deviation	8	0	\$27,689	\$4
	Minimum	40	12	\$23,000	\$12
	Maximum	60	12	\$80,000	\$22
Drafting Technology	N	13	13	9	12
	Mean	37	14	\$37,667	\$18
	Std. Deviation	10	9	\$12,619	\$8
	Minimum	10	10	\$17,000	\$12
	Maximum	50	45	\$60,000	\$42
Historic Preservation and Restoration Technology	N	8	8	5	5
	Mean	42	12	\$91,100	\$23
	Std. Deviation	12	0	\$119,101	\$3
	Minimum	20	12	\$3,500	\$19
	Maximum	60	12	\$300,000	\$25
Manufacturing Technology	N	3	3	3	3
	Mean	42	12	\$46,837	\$25
	Std. Deviation	12	0	\$27,268	\$13
	Minimum	32	12	\$15,360	\$10
	Maximum	55	12	\$63,250	\$32
Total	N	30	30	22	24
	Mean	40	13	\$53,455	\$20
	Std. Deviation	10	6	\$58,622	\$8
	Minimum	10	10	\$3,500	\$10
	Maximum	60	45	\$300,000	\$42

**College of the Redwoods  
Manufacturing Technology Advisory Committee  
Meeting Minutes**

Wednesday, April 17, 2013  
4:00-5:00 PM

Eureka Main Campus Room AT133 (Machine Tool Laboratory)

This meeting was called to order at 4:05 PM

1. Welcome and Introductions

Mike Peterson announced that Jen Carpenter is now serving as the Committee Chair. Committee members around the room introduced themselves.

Committee members present:

Steve Brown	College of the Redwoods
Rachel Callahan	Economic Fuel
Jen Carpenter	Wing Inflatables / MT Advisory Committee Chair
Jeff Cummings	College of the Redwoods
Bill Dilling	Dilling Machine Works
Lucien Eddisford	Snap-Fan
Don Ehnebuske	Redwood Region Economic Development Commission
Dave Enos	HROP / McKinleyville High School
Barbara Groom	Lost Coast Brewery
Bert Hafar	College of the Redwoods
Bruce Hamilton	Wildwood Manufacturing
Roger Kelly	RJ Stevens Company
Jeff Kinzer	Student / Ironside Metal Works / Robert Goodman Wines
John McClurg	Fire & Light
Steve McCluskey	Student
Jan Moorehouse	Rising Stars Foundation / HROP
Mike Peterson	College of the Redwoods
Brett Roslosnik	Fortuna High School
Nick Shull	College of the Redwoods
Dave Stevens	Eureka High School

2. State of the MT Program Report – Mike Peterson

Mike Peterson distributed the document *CR MT Advisory Committee Packet 4-17-2013.pdf* and spoke briefly about a statement on page three in the meeting minutes from March of 2012 that emphasized the importance of the Committee to the program.

Peterson highlighted a piece of data from the most recent MT Program Review on page six of the meeting packet. The ratio of students to teachers in this program is 18.41 compared to the district average of 28.52. This data is important because the institution

measures programs with a strong emphasis on this ratio when assessing a program's effectiveness. Thus, increasing the number of students is the most important thing that can be done to strengthen the program. It is important to note that lower student ratios are necessary in technical education because of teaching methods and safety issues; however, too low a ratio is a problem for program sustainability.

The MT Program Learning Outcomes (PLOs) appear on page seven of the meeting packet. The concept of the PLOs is to list abilities that students will have upon successful completion of the program. Program faculty continually assess these outcomes and seek input from the Committee to determine if they are appropriate, need revising, or need to be eliminated. Similarly, each course in the program has a list of Student Learning Outcomes (SLOs). These appear in the meeting packet on pages eight and nine. Peterson requested that committee members read the PLOs and SLOs and be prepared for further discussion on these in the future.

In February 2013, a completer survey report was produced by the college and MT Program completer data is shown in the meeting packet on pages 10 through 17. The response to this survey was low and the sample size was four. Thus, while some data exists, it is difficult to glean reliable data from this survey. However, the Committee should be aware of the data and reflect on it when evaluating the program's PLOs and SLOs.

Our efforts to gain accreditation through the Association of Technology, Management, and Applied Engineering (ATMAE) were postponed last year due to our institutional sanctions from the Accrediting Commission for Community and Junior Colleges (ACCJC). Now that our ACCJC accreditation standing has improved, we will be seeking accreditation through ATMAE next year. This Committee will play a role in that process because when the ATMAE visiting team assesses the program, they will want to meet with MT Advisory Committee members.

The Committee had a valuable discussion regarding the program's involvement in recruiting at the local high-schools, conducting summer programs, aligning the program with the DIY / maker movement, hosting a machine camp, teaching CR classes at the high-school facilities, getting more Academy of the Redwoods students to take classes, and promoting and marketing the program in general to the community including placing students in internships through the MT-42 course, Cooperative Work Experience in MT.

### 3. State of the MT Laboratory Report – Nick Shull

Nick Shull spoke about the broad spectrum of technology that we teach. The laboratory is well equipped and the technology is sophisticated. The program has received substantial support from grants; however the laboratory equipment and machinery is expensive so the program needs input from the advisory committee to recommend future purchases to maximize benefit. While the committee did not recommend specific equipment purchases at this meeting, valuable discussions took place about the future direction of the program.

#### 4. Industry Trends and Employment

The program has more requests for employees than it has students who have completed. Local business can't find the right help they need; they need mechanics that are well-rounded workers with diverse skills. Niche manufactures need generalized skills and there is a clear shortage of workers that are mechanical generalists. Many local businesses need niche market select skills and opportunities are available to people are reliable and have relevant abilities.

#### 5. Industry Recommendations for Program Improvements

There was much caution relating to specialization, and much encouragement regarding producing completers with diverse mechanical skills. Specifically, local industry is less in need of pure machinists, but is desperate for people who can perform all kinds of mechanical adjustments and repairs. An employee with ideal skills could be described as a Jack-of-all-trades or a modern millwright. More than a handyman, the ideal employee is a mechanical technician that can do it all. There were some comments about the need for evening classes to train this ideal employee while they are working.

Skills are needed in manufacturing and industrial repair work including an understanding of welding, machining, electrical concepts, electronics, general manufacturing, pneumatics, hydraulics, power transmission, frequency drives, CAD (e.g. Solidworks), and blueprint reading. Workers need adeptness for 3-D visualization, entrepreneurship, and product development. Ideal employees will possess an understanding of various materials used in manufacturing as well as artistic skills and the ability to design products that look good. In addition, good employees need to be able to communicate effectively and need the capability to discuss mechanical and design concepts clearly. Employees need to communicate casually, be focused and personable, and have good telephone and electronic communication skills.

This program needs to focus on marketing and should make efforts to find its target market base. Many ideas were generated including creating radio programs that speak to job opportunities, using social media, producing a video of manufacturing at local businesses that indicates that viewers could get training at CR, creating a class that works with local manufactures to have coordinated student teams working in the businesses, offering a new degree in technical studies, and developing a well-rounded general repair credential. Program faculty should ask local businesses, manufacturers, and machine shops what their employee's prime skill-sets are, and incorporate those into the program. This program should capitalize on the local abundance of interest in art. CR should exploit the linkages between art and manufacturing and hitch our wagon to the concepts embodied in the Maker Movement and attend trainings and events like the Maker Faire.

There was a discussion on the importance of internships and the new course, MT-42 Cooperative Work Experience in MT. Peterson asked if the program should align training with the National Institute of Metalworking Skills (NIMS). This organization

awards credentials for specific skills in manufacturing technology. The committee discussed the value of external credentialing.

There was some caution about changing too much. The program is producing students who are finding work. While the current MT curriculum may not specifically be written with an emphasis on industrial maintenance or millwright work, the program is still producing mechanical generalists with broad ranging skill sets.

6. Announcements and Other

The meeting was adjourned at 5:10 PM

## Committee Membership List

<b>Name</b>	<b>Title</b>	<b>Agency or Company</b>
Steve Brown	Professor, Drafting Technology	College of the Redwoods
Rachel Callahan	Economic Fuel Coordinator	Economic Fuel
Jen Carpenter	Design Engineer / MT Advisory Committee Chair	Wing Inflatables
Jeff Cummings	Dean, Career and Technical Education	College of the Redwoods
Jacqueline Debets	Economic Development Coordinator	County of Humboldt
Bill Dilling	CEO	Dilling Machine Works
Lucien Eddisford	CEO	Snap-Fan
Don Ehnebuske	Executive Director	Redwood Region Economic Development Commission
Dave Enos	Teacher	HROP / McKinleyville High School
Barbara Groom	CEO	Lost Coast Brewery
Bert Hafar	Associate Professor	College of the Redwoods
Bruce Hamilton	CEO	Wildwood Manufacturing
Susi Huschle	College & Career Resources Coordinator	Humboldt County Office of Education
Roger Kelly	General Manager	RJ Stevens Company
Suk Choo Kim	CEO	CPR Aquatic Incorporated
Jeff Kinzer	Student / Mechanical Technician	CR / Ironside Metal Works / Robert Goodman Wines
John McClurg	CEO	Fire & Light
Steve McCluskey	Student	College of the Redwoods
Jan Moorehouse	Executive Director	Rising Stars Foundation / HROP
Jerry Murray	Associate Professor	College of the Redwoods
Mike Peterson	Professor, Manufacturing Technology	College of the Redwoods
Pru Ratliff	Career and Technical Grants Manager	College of the Redwoods
Brett Roslosnik	Teacher	Fortuna High School
Nick Shull	Associate Professor	College of the Redwoods
Julie Slater	Counselor	East High School
Dave Stevens	Teacher	Eureka High School
Danny Walker	Professor, Welding Technology	College of the Redwoods