Manufacturing Engineering Technology

2014-15 Assessment Report

I. Introduction

The Bachelor of Science program in Manufacturing Engineering Technology is offered in three locations—Klamath Falls, Wilsonville, and at the Seattle campus located at Boeing. During the years 2004-2014, fall term full and part-time enrollment ranged from 75 to 147, with a high during 2005 of 147 students. Fall term 2014 enrollment was 80 full and part-time students. During the 2013-14 year, the program graduated a total of 5 students. The program has little data from this group of graduates with only two responding to the Career Services Graduate Survey six months after graduation, but data reported from graduates of 2011-12, 2012-13, and 2013-14 in aggregate reported an average salary of $64,625-$70,000. Eighty-five percent of this group of graduates were employed when surveyed six months after graduation and seven percent were continuing their education in graduate studies. Graduates reported employment with the following companies: FLIR Systems, Boeing, Warn Industries, ATS Automation, and Erickson Air Crane.

The Manufacturing Engineering Technology (MFG) Program at Oregon Institute of Technology was first accredited by ABET in 1985. Based on recommendations from the MMET Industry Advisory Council, curricular changes have been made over the past several years to keep the program current.

The Manufacturing and Mechanical Engineering and Technology (MMET) Department in which the MFG Program resides is the result of a merger of the Manufacturing Engineering Technology Department with the Mechanical Engineering Technology Department in 2004. This was done to increase administrative efficiency. In addition, the Mechanical Engineering program was added in 2005 and the masters program in Manufacturing Engineering Technology was approved in 2005. All four programs reside in the MMET Department under one department chair, not all programs are available at all three locations. The result of this unified department is a stronger program with more resources available and better faculty collaboration.

II. Program Mission, Objectives and Student Learning Outcomes

Following a fall 2014 ABET visit, the faculty revisited the program student learning outcomes and updated them to reflect the current ABET a-k outcomes. These were reviewed and approved by the faculty in a department meeting held February 3, 2015 (minutes in Appendix B). Most recently, at the Spring 2015 IAC meeting held on April 3rd in Klamath Falls and attended by faculty and industry representatives in Klamath Falls and Wilsonville, the Program Educational Objectives (PEOs) for both the MET and MFG programs and the revised student learning outcomes were reviewed and approved (minutes in Appendix C).

Mission Statement

The Manufacturing Engineering Technology Program at Oregon Institute of Technology is an applied engineering technology program. Its mission is to provide graduates the skills and knowledge for successful careers in manufacturing engineering technology.

Program Educational Objectives

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. They are generally thought of as desired alumni achievements between three and five years after graduation.

The Program Educational Objectives of Oregon Tech's manufacturing engineering technology program are to produce graduates who:

- are able to analyze, design, implement, and maintain practical mechanical and manufacturing systems.
- communicate effectively and work well on team-based engineering projects.
- succeed in manufacturing engineering positions.
- pursue continued professional development.

The faculty planned an assessment cycle for the program's educational objectives as shown in Table 1.

Program Objective Assessment Cycle	2014-15	2015-16	2016-17
Review Program Mission and Educational Objectives by the industrial advisory committee	x		
Assess and/or Review Program Mission and Educational Objectives with Constituents (survey, meetings)		x	

Table 1. Program Education Objectives Assessment Cycle

Student Learning Outcomes
The Manufacturing Engineering Technology Program has adopted the ABET a-k outcomes for Engineering Technology programs as listed below. This change to adopt the a-k language was made by program faculty based on input received from the October, 2014 ABET visit.

An engineering technology program must demonstrate that graduates have:

a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
e. an ability to function effectively as a member or leader on a technical team
f. an ability to identify, analyze, and solve broadly-defined engineering technology problems
g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
h. an understanding of the need for and an ability to engage in self-directed continuing professional development
i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
j. a knowledge of the impact of engineering technology solutions in a societal and global context
k. a commitment to quality, timeliness, and continuous improvement.

In addition to the eleven a-k outcomes there are two outcomes identified through the ABET Manufacturing Engineering specific criteria. These have been defined as below.

M1. Graduates must demonstrate the ability to apply the following to the solution of manufacturing problems to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement, and industrial organization and management.

M2. Graduates of baccalaureate degree programs must have a capstone or integrating experience that develops and illustrates student competencies in applying both technical and non-technical skills in successfully solving manufacturing problems.

III. Three-Year Cycle for Assessment of Student Learning Outcomes
The faculty planned a three-year assessment cycle for the program's student learning outcomes as shown in Table 2.

Student Learning Outcome	2014-15	2015-16	2016-17	
a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities			x	
b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies	x			
c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes			x	
d an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives	x			
e. an ability to function effectively as a member or leader on a technical team		x		
f. an ability to identify, analyze, and solve broadly-defined engineering technology problems	x			
g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature			x	
h. an understanding of the need for and an ability to engage in self-directed continuing professional development			x	
i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity		x		
j. a knowledge of the impact of engineering technology solutions in a societal and global context		x		
k. A commitment to quality, timeliness, and continuous improvement		x		
M1. Graduates must demonstrate the ability to apply the following to the solution of manufacturing problems to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement, and industrial organization and management.	x			
M2. Graduates of baccalaureate degree programs must have a capstone or integrating experience that develops and illustrates student competencies in applying both technical and non-technical skills in successfully solving manufacturing problems.			x	

Table 2. Assessment Cycle

IV. Summary of 2014-15 Assessment Activities

The Manufacturing Engineering Technology faculty conducted formal assessment of four student learning outcomes during 2014-15. These outcomes have been mapped to the curriculum as shown in Appendix A.

SLO b. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies.

The performance criteria for this learning outcome are:

1. Select and apply math principles to obtain analytical or numerical solution(s) to an engineering problem.
2. Select and apply scientific principles that govern the performance of a given process or system in engineering problem(s).
3. Select and apply engineering principles that govern the performance of a given process or system in engineering problem(s).
4. Select and apply appropriate technology tools (software, equipment, CAD, CNC, instrumentation, etc.) for a given process or system to an engineering problem.

Direct Assessment #1 Klamath Campus
The faculty assessed this outcome in MET 315 Machine Design I fall term 2014, using an exam scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were five manufacturing students involved in the assessment, the results are shown in Table 3.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	80%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	80%

Table 3. Assessment Results for SLO b, fall 2014, Klamath Campus

Strengths: The results indicate that the majority of students met faculty expectations for all criteria assessed. The instructor indicated that students were able evaluate and solve all problems with minimal guidance (failure prediction methods).

Weaknesses: The instructor suggested that this assessment tool did not fully evaluate student's ability to select and apply scientific principles. Instructor feedback also indicated that students needed guidance to select certain aspects of engineering principles for this particular problem.

Actions: Design future assessment to place more emphasis on the selection and application of scientific and engineering principles.

Direct Assessment #2 Klamath Campus
The faculty assessed this outcome in MET 360 Materials II fall term 2014, using an exam scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were four manufacturing students involved in the assessment, the results are shown in Table 4.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%

Table 4. Assessment Results for SLO b, fall 2014, Klamath Campus

Strengths: The results indicate that the students met faculty expectations for all criteria assessed.

Weaknesses: None indicated by the results or instructor feedback.

Actions: None needed at this time, continue assessment as designed.

Direct Assessment #3 Wilsonville Campus
The faculty assessed this outcome in MFG 333 Statistical Methods for Quality Improvement fall term 2014, using a homework set scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were four manufacturing students involved in the assessment, their results are shown in Table 5.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%

Table 5. Assessment Results for SLO b, fall 2014, Wilsonville Campus

Strengths: As the results show, faculty indicate that students were able to use math and science knowledge to solve the statistical process control problems involved in this assessment.

Weaknesses: No weaknesses evident from this assessment.

Action: None required at this time.

Direct Assessment #4 Wilsonville Campus
The faculty assessed this outcome in MET 360 Materials II spring term 2015, using exam questions scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There was one manufacturing student involved in the assessment, the results are shown in Table 6.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%

Table 6. Assessment Results for SLO b, spring 2015, Wilsonville Campus

Strengths: For the most part students did an excellent job approaching problems in an organized and logical format.

Weaknesses: Some minor careless mistakes such as unit, sig-fig errors. Some issues of not knowing what scientific principle to apply.

Action: Emphasize more in class examples in these areas.

Direct Assessment #5 Seattle Campus
The faculty assessed this outcome in MFG 333 Statistical Methods for Quality Improvement winter term 2015, using a statistics assignment scored with a rubric. There were three manufacturing students who participated in the assessment. The results are shown in Table 7.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	n/a
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%

Table 7. Assessment Results for SLO b, winter 2015, Seattle Campus

Strengths: Students met faculty expectations for each performance criteria assessed. Student were highly proficient in their usage of statistics.

Weaknesses: The assignment did not address scientific principles.

Action: Redesign the assignment to include scientific principles.

Direct Assessment #6 Seattle Campus

The faculty assessed this outcome in MECH 316 Machine Design II winter term 2015, using an assignment scored with a rubric. There were three manufacturing students who participated in the assessment. The results are shown in Table 8.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Selects & applies math principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies scientific principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	66.7%
Selects & applies engineering principles	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	100%
Selects & applies appropriate technology tools	Rubric-scored exam questions	1-4 proficiency scale	80% score 3 or 4	66.7%

Table 8. Assessment Results for SLO b, winter 2015, Seattle Campus

Strengths: Most students demonstrated the ability to apply theoretical knowledge gained during their education to real-world problems.

Weaknesses: Some students were overwhelmed and struggled to approach the problem in an engineering manner.

Action: Include more design project type assignments in the course and curriculum to improve on their abilities.

Indirect Assessment #1 MMET Undergraduate Exit Survey

During the spring term, each graduating senior completes an exit survey. The survey includes questions on how well the program prepared the student on each SLO. This survey data is reviewed by faculty to determine any strengths or weaknesses as perceived by students on this SLO. Student responses over the past three years have been aggregated for this report. There were a total of 17 responses from Klamath Falls seniors, six responses from Wilsonville seniors and three responses from Seattle seniors. Student responses from all three locations indicate that 100% of students felt prepared in this outcome. Details are included in Table 9.

	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls	47%	53%	0%
Wilsonville	50%	50%	0%
Seattle	67%	33%	0%

Table 9. Indirect Assessment for SLO b, Senior Exit Surveys 2013-15

SLO d. An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives

The performance criteria for this learning outcome are

1. Identify an appropriate set of realistic constraints and performance criteria.
2. Generate one or more creative solutions to meet the criteria and constraints.
3. Create a detailed design within realistic constraints.
4. Plan and manage a small technical project.

Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in MFG 343 Manufacturing Tool Design winter term 2015, using a project scored with a rubric. There were six manufacturing students involved in the assessment. The results are shown in Table 10.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify constraints & criteria	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	83%
Generate solutions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Create a design	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	83%
Plan and manage a project	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	83%

Table 10. Assessment Results for SLO d, winter 2015, Klamath Campus

Strengths: Students were able to demonstrate strong skills in CAD, design and costing.

Weaknesses: The project design somewhat lacked reality as to constraints for design.

Actions: Do an interim review of the projects to see if the students are properly on track with the goals.

Direct Assessment #2 Klamath Campus

This outcome was scheduled for assessment in MFG 463 Senior Projects, spring 2015. Program faculty were concerned about their ability to assess the performance of individual student in a team based project. During fall 2015 program faculty will redesign this assessment.

Direct Assessment #3 Wilsonville Campus

The faculty assessed this outcome in MFG 344 Design of Manufacturing Tooling, spring term 2015, using a project scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were four manufacturing students involved in the assessment. The results are shown in Table 11.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify constraints & criteria	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	0%
Generate solutions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Create a design	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Plan and manage a project	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	25%

Table11. Assessment Results for SLO d, spring 2015, Wilsonville Campus

Strengths: Understanding of what a Progressive Die is, Ability to calculate center of pressure

Weaknesses: Understanding of drafting and dimensioning standards, Understanding of clearance requirements, project management skills

Actions: Provide example of properly dimensioned part, review ASME standards. Make HW #1 be the project completion plan and request weekly project updates.

Direct Assessment #4 Wilsonville Campus

The faculty assessed this outcome in MFG 463 Senior Project, spring term 2015, using a project scored with a rubric. There were seven manufacturing students involved in the assessment. The results are shown in Table 12.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify constraints & criteria	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Generate solutions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Create a design	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Plan and manage a project	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table12. Assessment Results for SLO d, spring 2015, Wilsonville Campus

Strengths: Excellent creativity. Students followed the report templates hence they got good coverage of the essential points. Two students did their projects in industry. The other five students chose to work in groups of three and two.

Weaknesses: Some students deviated from the report.

Actions: None needed.

Direct Assessment #5 Seattle Campus
The faculty assessed this outcome in MECH 316 Machine Design II winter term 2015, using an assignment scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were three manufacturing students involved in the assessment. The results of the manufacturing students are shown in Table 13.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify constraints & criteria	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	66.7%
Generate solutions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	66.7%
Create a design	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	66.7%
Plan and manage a project	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	N/A

Table13. Assessment Results for SLO d, winter 2015, Seattle Campus

Strengths: Most students did a very good job of selecting reasonable components and designing an appropriate shaft

Weaknesses: Some students struggled to apply the textbook knowledge to real-world problems.

Actions: Include more design project type problems in this course.

Direct Assessment #6 Seattle Campus
This outcome was scheduled for assessment in MFG 463 Senior Projects, spring 2015. Program faculty were concerned about their ability to assess the performance of individual student in a team based project. During fall 2015 program faculty will redesign this assessment.

Indirect Assessment #1 MMET Undergraduate Exit Survey
During the spring term, each graduating senior completes an exit survey. The survey includes questions on how well the program prepared the student on each SLO. This survey data is reviewed by faculty to determine any strengths or weaknesses as perceived by students on this SLO. Student responses over the past three years have been aggregated for this report. There were a total of 17 responses from Klamath Falls seniors, six responses from Wilsonville seniors and three responses from Seattle seniors. Student responses from all three locations indicate that 100% of students from the Wilsonville and Seattle locations, and 88% from the Klamath Falls location felt prepared in this outcome. Details are included in Table 14.

	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls	59%	29%	12%
Wilsonville	83%	17%	0%
Seattle	67%	33%	0%

Table 14. Indirect Assessment for SLO d, Senior Exit Surveys 2013-15

SLO f. An ability to identify, analyze, and solve broadly-defined engineering technology problems

The performance criteria for this learning outcome are

1. Identify an engineering problem.
2. Make appropriate assumptions.
3. Formulate a plan which will lead to a solution.
4. Apply engineering principles to analyze the problem.
5. Document results in an appropriate format.

Direct Assessment #1 Klamath Campus
The faculty assessed this outcome in MFG 331 Industrial Controls spring term 2015, using a project scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were three manufacturing students involved in the assessment. The results are shown in Table 15.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify an engineering problem	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Analysis & assumptions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Formulate a plan	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Apply engineering principles	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Document results	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	66.7%

Table 15. Assessment Results for SLO f, spring 2015, Klamath Campus

Strengths: Students were able to analyze the problem and correlate/reproduce the physical system as a PLC program.

Weaknesses: Light on documentation, patience while learning Microsoft Visio.

Actions: An exercise focused on proper documentation.

Direct Assessment #2 Klamath Campus
The faculty assessed this outcome in MFG 313 Manufacturing Analysis and Planning fall term 2014, using a project scored with a rubric. There were nine manufacturing students involved in the assessment. The results of the manufacturing students are shown in Table 16.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify an engineering problem	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	89%
Analysis & assumptions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	89%
Formulate a plan	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	89%
Apply engineering principles	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	89%
Document results	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	67%

Table 16. Assessment Results for SLO f, fall 2014, Klamath Campus

Strengths: Students have strong skills in applying engineering principles based on the fact that many have industry work experience.

Weaknesses: Students had difficulty in documentation of results, specifically in format, statement clarification and organization.

Actions: Review assignment expectations regarding documentation and application principles.

Direct Assessment #3 Wilsonville Campus

The faculty assessed this outcome in MFG 331 Industrial Controls winter term 2015, using a lab/project scored with a rubric. There were five manufacturing students involved in the assessment. The results are shown in Table 17.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify an engineering problem	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	80%
Analysis & assumptions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	80%
Formulate a plan	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	80%
Apply engineering principles	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	80%
Document results	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	80%

Table 17. Assessment Results for SLO f, winter 2015, Wilsonville Campus

Strengths: Most of the student understood the problem and produced a working program to control the mixing tank.

Weaknesses: Some students were light on documentation and lacked adequate English language skills.

Actions: Include a structured documentation exercise in this course.

Direct Assessment #4 Wilsonville Campus

The faculty assessed this outcome in MFG 463 Senior Project, spring term 2015, using a project scored with a rubric. There were seven manufacturing students involved in the assessment. The results are shown in Table 18.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify an engineering problem	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Analysis & assumptions	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Formulate a plan	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Apply engineering principles	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Document results	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table 18. Assessment Results for SLO f, spring 2015, Wilsonville Campus

Strengths: Excellent creativity. Students followed the report templates hence they got good coverage of the essential points. Two students did their projects in industry. The other five students chose to work in groups of three and two.

Weaknesses: Some students deviated from the report.

Actions: None needed.

Direct Assessment #5 Seattle Campus

This outcome was scheduled for assessment in MECH 316 Machine Design II winter term 2015 and MFG 463 Senior Projects, spring 2015. At the writing of this report data from these assessments was not received.

Indirect Assessment #1 MMET Undergraduate Exit Survey

During the spring term, each graduating senior completes an exit survey. The survey includes questions on how well the program prepared the student on each SLO. This survey data is reviewed by faculty to determine any strengths or weaknesses as perceived by students on this SLO. Student responses over the past three years have been aggregated for this report. There were a total of 17 responses from Klamath Falls seniors, six responses from Wilsonville seniors and three responses from Seattle seniors. Student responses from all three locations indicate that 100% of students felt prepared in this outcome. Details are included in Table 19.

	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls	65%	35%	0%
Wilsonville	67%	33%	0%
Seattle	67%	33%	0%

Table 19. Indirect Assessment for SLO f, Senior Exit Surveys 2013-15

SLO M1. Graduates must demonstrate the ability to apply the following to the solution of manufacturing problems to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement, and industrial organization and management.

The performance criteria for this learning outcome are:
1. Materials and manufacturing processes
2. Product design process, tooling and assembly
3. Manufacturing systems, automation, and operations
4. Statistics, quality and continuous improvement
5. Industrial organization and management

Direct Assessment #1 Klamath Campus
The faculty assessed this outcome in MFG 333 Statistical Methods for Quality Improvement winter term 2015, using a project scored with a rubric. There were eleven manufacturing students involved in the assessment. The results are shown in Table 20.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	82%
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	73%
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	55%
Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	82%
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	82%

Table 20. Assessment Results for SLO M1, winter 2015, Klamath Campus

Strengths: The project is well designed to capture practice from theories to applications.

Weaknesses: Several students had difficulty in analyzing and planning manufacturing systems. In addition documentation of results lacked adequate organization and statement clarification.

Actions: Provide guidance to students as they learn to apply theory to practice.

Direct Assessment #2 Klamath Campus
The faculty assessed this outcome in MFG 342 Computer Aided Machining winter term 2015, using a project scored with a rubric. There were seven manufacturing students involved in the assessment. The results are shown in Table 21.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	85%
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	85%
Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	n/a
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table 21. Assessment Results for SLO M1, winter 2015, Klamath Campus

Strengths: Students demonstrated good CAD/CAM work and well as good description and summary of work and operations lists to complete documentation.

Weaknesses: Students could improve in their ability to do 2D drawings in order to do a good job on drawing parts.

Actions: Give examples of expected documentation for proper engineering 2D drawings.

Direct Assessment #3 Wilsonville Campus

The faculty assessed this outcome in MFG 344 Design of Manufacturing Tooling spring term 2015, using a project scored with a rubric. This assessment was administered to students from all majors in the MMET Department. There were four manufacturing students involved in the assessment. The results are shown in Table 22.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	0%
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	75%

Table 22. Assessment Results for SLO M1, spring 2015, Wilsonville Campus

Strengths: Understanding of what a Progressive Die is, Ability to calculate center of pressure.

Weaknesses: Understanding of drafting and dimensioning standards, Understanding of clearance requirements, project management skills.

Actions: Provide example of properly dimensioned part, review ASME standards. Make HW #1 be the project completion plan and request weekly project updates.

Direct Assessment #4 Wilsonville Campus

The faculty assessed this outcome in MGT 345 Project Management spring term 2015, using a project scored with a rubric. This project was geared toward project management and therefore a good assessment for the "industrial organization and management" criteria of this outcome, but did not address the other four criteria which were assessed in other courses. There was one manufacturing student involved in the assessment. The results are shown in Table 23.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	N/A
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	N/A
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	N/A
Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	N/A
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table 23. Assessment Results for SLO M1, spring 2015, Wilsonville Campus

Strengths: The results indicate that the students met faculty expectations for all criteria assessed.

Weaknesses: None indicated by the results or instructor feedback.

Actions: None needed at this time, continue assessment as designed.

Direct Assessment #5 Wilsonville Campus

The faculty assessed this outcome in MFG 453 Automation and Robotics spring term 2015. There were six manufacturing students involved in the assessment. The results are shown in Table 24.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	67%
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	50%
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	67%
Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	0%
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table 24. Assessment Results for SLO M1, spring 2015, Wilsonville Campus

Strengths: The students comprehended the problem presented and recognized many of the implications for automation. They researched equipment that was appropriate to the problem.

Weaknesses: Time management seems to have been a problem; the reports have the appearance of being done at the last minute. In the case of the packaging report, taking time to review the work would have shown the 2.25 minutes per package was not a correct analysis of the line timing. Overall, students have problems with written presentation. Grammar and organizational problems are present in all of the work.

Actions: I used small group projects in this assessment with a group report as the deliverable. In the future, I will use individual projects; in the group project, the efforts and abilities of the individuals become muted. I started the project after mid-term and there was not much opportunity for me to feed back on the reports. In the future, I will start it the second or third week of class and require weekly progress reports.

Direct Assessment #6 Seattle Campus

The faculty assessed this outcome in MFG 453 Automation and Robotics fall term 2014, using a project scored with a rubric. There were three manufacturing and one mechanical engineering technology (MET) student involved in the assessment. The results for the manufacturing students are shown in Table 25.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Materials and manufacturing processes	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Product design process, tooling, and assembly	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Manufacturing systems, automation, and operations	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Statistics, quality and continuous improvement	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%
Industrial organization and management	Rubric-scored project	1-4 proficiency scale	80% score 3 or 4	100%

Table 25. Assessment Results for SLO M1, fall 2014, Wilsonville Campus

Strengths: The students performed well on the manufacturing processes and the automation portion of the project.

Weaknesses: None demonstrated.

Actions: The initial plan was to assess this outcome using 3 different courses, all taught by adjuncts. This proved to be problematic. This project from MFG 453 could be changed slightly to incorporate all of the outcomes of MFG-M1.

Direct Assessment #7 Seattle Campus

This outcome was scheduled for assessment in MFG 333 Statistical Methods for Quality Improvement winter term 2015 and MFG 463 Senior Projects, spring 2015. Data has not been received.

Indirect Assessment #1 MMET Undergraduate Exit Survey

During the spring term, each graduating senior completes an exit survey. The survey includes questions on how well the program prepared the student on each SLO. This survey data is reviewed by faculty to determine any strengths or weaknesses as perceived by students on this SLO. Student responses over the past three years have been aggregated for this report. There were a total of 17 responses from Klamath Falls seniors, six responses from Wilsonville seniors and three responses from Seattle seniors. Student responses from all three locations indicate that 100% of students from the Wilsonville and Seattle locations, and 94% from the Klamath Falls location felt prepared in this outcome. Details are included in Table 26.

	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls	76%	18%	6%
Wilsonville	83%	17%	0%
Seattle	67%	33%	0%

Table 26. Indirect Assessment for SLO M1, Senior Exit Surveys 2013-15

V. Summary of Student Learning for 2014-15

MMET faculty from Klamath Falls and Wilsonville met on June 9, 2015 to review assessment results, to determine if improvements were needed, and to decide upon future action plans. A summary of their findings is outlined below.

SLO b. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies

Strengths

Klamath:
MET315 – The results indicate that the majority of students met faculty expectations for all criteria assessed. The instructor indicated that students were able evaluate and solve all problems with minimal guidance.

MET360 - The results indicate that the students met faculty expectations for all criteria assessed.

Wilsonville:
MFG333 - As the results show, faculty indicate that students were able to use math and science knowledge to solve the statistical process control problems involved in this assessment.

MET360 - For the most part students did an excellent job approaching problems in an organized and logical format.

Seattle:
MFG333 - Students met faculty expectations for each performance criteria assessed. Student were highly proficient in their usage of statistics.

MECH316 - Most students demonstrated the ability to apply theoretical knowledge gained during their education to real-world problems.

Weaknesses

Klamath:
MET315 - The instructor suggested that this assessment tool did not fully evaluate student's ability to select and apply scientific principles. Instructor feedback also indicated that students needed guidance to select certain aspects of engineering principles for this particular problem, but overall student performance met expectations for this outcome.

MET360 - None indicated by the results or instructor feedback.

Wilsonville:
MFG333 - No weaknesses evident from this assessment.

MET360 - Some minor careless mistakes such as unit, sig-fig errors. Some issues of not knowing what scientific principle to apply. But overall, student performance met expectations.

Seattle:
MFG333 - The assignment did not address scientific principles.

MECH316 - Some students were overwhelmed and struggled to approach the problem in an engineering manner.

Actions – SLO b cont.

Klamath:
None needed at this time.

Wilsonville:
None needed at this time.

Seattle:
Program faculty will redesign the assignment in MFG333 to include scientific principles and include more design project type assignments in MECH316 and throughout the curriculum to improve on their abilities.

SLO d. An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives

Strengths

Klamath:
MFG343 – Students were able to demonstrate strong skills in CAD, design and costing.

Wilsonville:
MFG344 - Understanding of what a Progressive Die is, Ability to calculate center of pressure.

MFG463 - Excellent creativity. Students followed the reportage templates hence they got good coverage of the essential points.

Seattle:
MECH316 - Most students did a very good job of selecting reasonable components and designing an appropriate shaft

Weaknesses

Klamath:
MFG343 - The project design somewhat lacked reality as to constraints for design.

Wilsonville:
MFG344 - Understanding of drafting and dimensioning standards, Understanding of clearance requirements, project management skills.

MFG463 - Some students deviated from the report.

Seattle:
MECH316 - Some students struggled to apply the textbook knowledge to real-world problems.

Actions

Klamath:
MFG463 - Program faculty were concerned about their ability to assess the performance of individual student in a team based project. During fall 2015 program faculty will redesign this assessment.

Wilsonville:
MFG344 – Provide example of properly dimensioned part, review ASME standards. Request weekly project updates.

Actions – SLO d cont.

Seattle:
MFG463 - Program faculty were concerned about their ability to assess the performance of individual student in a team based project. During fall 2015 program faculty will redesign this assessment.

SLO f. An ability to identify, analyze, and solve broadly-defined engineering technology problems

Strengths

Klamath:
MFG313 – Students have strong skills in applying engineering principles based on the fact that many have industry work experience.

MFG331 - Students were able to analyze the problem and correlate/reproduce the physical system as a PLC program.

Wilsonville:
MFG331 - Most of the student understood the problem and produced a working program to control the mixing tank.

MFG463 - Excellent creativity. Students followed the report templates hence they got good coverage of the essential points.

Weaknesses

Klamath:
MFG313 - Students had difficulty in documentation of results, specifically in format, statement clarification and organization.

MFG331 – Some students light on documentation and patience while learning Microsoft Visio.

Wilsonville:
MFG331 - Some students were light on documentation and lacked adequate English language skills.

MFG463 - Some students deviated from the report.

Actions

Klamath:
None needed at this time.

Wilsonville:
None needed at this time.

SLO M1. Graduates must demonstrate the ability to apply the following to the solution of manufacturing problems to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement, and industrial organization and management.

Strengths

Klamath:
MFG333 – The project is well designed to capture practice from theories to applications.

MFG342 - Students demonstrated good CAD/CAM work and well as good description and summary of work and operations lists to complete documentation.

Wilsonville:
MFG344 – Understanding of what a Progressive Die is, Ability to calculate center of pressure.

MFG453 – The students comprehended the problem presented and recognized many of the implications for automation.
MGT345 – The results indicate that the students met faculty expectations for all criteria assessed.

Seattle:
MFG453 - The students performed well on the manufacturing processes and the automation portion of the project.

Weaknesses

Klamath:
MFG333 - Several students had difficulty in analyzing and planning manufacturing systems. In addition documentation of results lacked adequate organization and statement clarification.

MFG342 - Students could improve in their ability to do 2D drawings in order to do a good job on drawing parts.

Wilsonville:
MFG344 – Understanding of drafting and dimensioning standards, Understanding of clearance requirements, project management skills.

MFG453 – Time management seems to have been a problem; the reports have the appearance of being done at the last minute. In the case of the packaging report, taking time to review the work would have shown the 2.25 minutes per package was not a correct analysis of the line timing. Overall, students have problems with written presentation. Grammar and organizational problems are present in all of the work.

MGT345 – None demonstrated.

Seattle:
MFG453 - None demonstrated.

Actions

Klamath:
MFG333 - Provide guidance to students as they learn to apply theory to practice.

Wilsonville:
MFG453 – Require weekly progress reports.

Seattle:
MFG453 - None needed at this time.

VI. Summary of 2015 MFG Undergraduate Exit Survey, Klamath Falls Only

Spring 2015 Exit Survey SLO b

Location (responses)	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls (4)	50%	50%	0%
Wilsonville (0)			
Seattle (0)			

Spring 2015 Exit Survey SLO d

Location (responses)	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls (4)	75%	0%	25%
Wilsonville (0)			
Seattle (0)			

Spring 2015 Exit Survey SLO f

Location (responses)	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls (4)	50%	50%	0%
Wilsonville (0)			
Seattle (0)			

Spring 2015 Exit Survey SLO M1

Location (responses)	Highly Prepared	Prepared	Inadequately Prepared
Klamath Falls (4)	100%	0%	0%
Wilsonville (0)			
Seattle (0)			

VII. Changes Resulting from Assessment

SLO a. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities

Faculty analysis of assessment results from 2013-14 identified a weakness in student's ability to make connections between 2D and 3D drawings. During Fall 2014 Convocation faculty identified MFG314, Geometric Dimensioning and Tolerancing as a course to re-enforce and to re-emphasize the aspects of proper 2D engineering drawings. Faculty reviewed student work collected from this course during 2015 winter and spring terms at the Klamath Falls location and noted a significant improvement in the quality of the 2D drawings. Faculty would like to continue this focus in MFG314 and expects to see further improvement of student's ability to connect 2D/3D in upper level coursework. In addition, the prerequisite for MFG314 has been changed from MET241 (CAD I) to MET242 (CAD II). This outcome will be assessed again in 2016-17.

SLO c. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes

Strengths: Students were able to conduct experiments with proficiency.

Weaknesses: Students were less proficient in the analysis of experimental results and identifying appropriate improvements for processes.

Actions: Program faculty will redesign the assignment to include two parts. Part I conduct the experiment and Part II analysis and improvement. This assignment was embedded in MFG 331 spring term 2015. As shown, students met expectations. SLO-c with this assignment will be assessed again spring term 2017.

SLO M1. Graduates must demonstrate the ability to apply the following to the solution of manufacturing problems to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement, and industrial organization and management.

The review of assessment results from this outcome in 2013-14 indicated a weakness in the design of the assessment method. The projects designed to assess this outcome failed to address many aspects of the criteria. Program faculty from the three locations met during fall term 2014 to design an assessment plan and projects to address all the criteria for this outcome. In addition the program faculty designed a new rubric aligned with the new ABET 2014-15 criteria. This outcome was assessed again this year following the new plan.

Appendix A1
SLO-Curriculum Map

Outcome b: an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies

I = Introduced R = Reinforced E = Emphasized

	Freshman			Sophomore			Junior			Senior		
Fall	Math 111	Coll Alg		MET 160	Materials	I	MET 375	Solid Model	E	MFG 453	Robotics	E
	MET 111	Orient I	I	MATH 252	Integral Calc		MFG 313	Mfg An & Plan	R	MFG 454	Thermal Sys	E
	WRI 121	Eng Comp		MFG 314	Geo Tol	E	MET 315	Machine Des I	R	MFG 461	Sr Proj	E
		Hum/ Soc Sci		PHY 201/221	Physics		MFG 341	Num Con Pr		WRI 327	Adv Tech Wr	
		Hum/ Soc Sci		MET 242	CAD II	R	MET 360	Materials II	E	ANTH 452	Global	
Win	CHE 101/4	Chem		ENGR 211	Statics	E	MET 326	Elec Power	E	MFG 462	Sr Proj II	E
	Math 112	Trig		Math 361	Stats		MFG 333	Stats for QI				
	MFG 120	Mfg Proc I	I	MFG 112	Mfg Proc	I	MFG 342	Comp Mach	E		Bus/ IMGT	
	WRI 122	Eng Comp		PHY 202/222	Physics		MFG 343	Tool Design	R		Mfg elec	
	MET 112	Orient II	I				MET 316	Mach Design	E		Mfg elec	
								Hum/ Soc Sci			Hum/ Soc Sci	
Spr	Math 251	Diff Calc		ENGR 236	Elec Circuits	R	IMGT 345	Eng Econ		ENGT 415	Occ Safety	
	MFG 103	Welding		Math 362	Stats II		MFG 331	Ind Controls	E	ENGR 485	FE Exam	
	MET 241	CAD I	I	ENGR 213	Materials	E	MFG 344	Des Mfg Tooling	E	MFG 463	Sr Proj III	E
	SPE 111	Speech		WRI 227	Tech Report		SPE 321	Small Gr Team		MFG 447	Lean Mfg	
		Hum/ Soc Sci		ENGR 266	Program/ Engineer	I	MGT 335	Proj Mgt			Hum/ Soc Sci	
											Mfg Elec	

Appendix A2
SLO-Curriculum Map

Outcome d: an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives.

I = Introduced R = Reinforced E = Emphasized

	Freshman			Sophomore			Junior			Senior		
Fall	Math 111	Coll Alg		MET 160	Materials		MET 375	Solid Model	R	MFG 453	Robotics	E
	MET 111	Orient I		MATH 252	Integral Calc		MFG 313	Mfg An & Plan	R	MFG 454	Thermal Sys	E
	WRI 121	Eng Comp		MFG 314	Geo Tol		MET 315	Machine Des I	R	MFG 461	Sr Proj	E
		Hum/ Soc Sci		PHY 201/221	Physics		MFG 341	Num Con Pr		WRI 327	Adv Tech Wr	
		Hum/ Soc Sci		MET 242	CAD II		MET 360	Materials II	E	ANTH 452	Global	
Win	CHE 101/4	Chem		ENGR 211	Statics		MET 326	Elec Power	E	MFG 462	Sr Proj II	E
	Math 112	Trig		Math 361	Stats		MFG 333	Stats for QI				
	MFG 120	Mfg Proc I	I	MFG 112	Mfg Proc	I	MFG 342	Comp Mach	E		Bus/ IMGT	
	WRI 122	Eng Comp		PHY 202/222	Physics		MFG 343	Tool Design	R		Mfg elec	
	MET 112	Orient II					MET 316	Mach Design	E		Mfg elec	
								Hum/ Soc Sci			Hum/ Soc Sci	
Spr	Math 251	Diff Calc		ENGR 236	Elec Circuits	R	IMGT 345	Eng Econ		ENGT 415	Occ Safety	
	MFG 103	Welding		Math 362	Stats II		MFG 331	Ind Controls	E	ENGR 485	FE Exam	
	MET 241	CAD I	I	ENGR 213	Materials		MFG 344	Des Mfg Tooling	E	MFG 463	Sr Proj III	E
	SPE 111	Speech		WRI 227	Tech Report		SPE 321	Small Gr Team		MFG 447	Lean Mfg	
		Hum/ Soc Sci		ENGR 266	Program/ Engineer	I	MGT 335	Proj Mgt	R		Hum/ Soc Sci	
											Mfg Elec	

Appendix A3
SLO-Curriculum Map

Outcome f: an ability to identify, analyze, and solve broadly-defined engineering technology problems.

I = Introduced R = Reinforced E = Emphasized

	Freshman			Sophomore			Junior			Senior		
Fall	Math 111	Coll Alg		MET 160	Materials	I	MET 375	Solid Model	E	MFG 453	Robotics	E
	MET 111	Orient I	I	MATH 252	Integral Calc		MFG 313	Mfg An & Plan	R	MFG 454	Thermal Sys	E
	WRI 121	Eng Comp		MFG 314	Geo Tol	R	MET 315	Machine Des I	R	MFG 461	Sr Proj	E
		Hum/ Soc Sci		PHY 201/221	Physics		MFG 341	Num Con Pr	R	WRI 327	Adv Tech Wr	
		Hum/ Soc Sci		MET 242	CAD II	R	MET 360	Materials II	R	ANTH 452	Global	
Win	CHE 101/4	Chem		ENGR 211	Statics	R	MET 326	Elec Power	E	MFG 462	Sr Proj II	E
	Math 112	Trig		Math 361	Stats		MFG 333	Stats for QI				
	MFG 120	Mfg Proc I	I	MFG 112	Mfg Proc	I	MFG 342	Comp Mach	E		Bus/ IMGT	
	WRI 122	Eng Comp		PHY 202/222	Physics		MFG 343	Tool Design	R		Mfg elec	
	MET 112	Orient II	I				MET 316	Mach Design	E		Mfg elec	
								Hum/ Soc Sci			Hum/ Soc Sci	
Spr	Math 251	Diff Calc		ENGR 236	Elec Circuits	R	IMGT 345	Eng Econ		ENGT 415	Occ Safety	
	MFG 103	Welding	I	Math 362	Stats II		MFG 331	Ind Controls	E	ENGR 485	FE Exam	
	MET 241	CAD I	I	ENGR 213	Materials	R	MFG 344	Des Mfg Tooling	E	MFG 463	Sr Proj III	E
	SPE 111	Speech		WRI 227	Tech Report		SPE 321	Small Gr Team		MFG 447	Lean Mfg	
		Hum/ Soc Sci		ENGR 266	Program/ Engineer	I	MGT 335	Bus/ IMGT			Hum/ Soc Sci	
											Mfg Elec	

Appendix A4
SLO-Curriculum Map

Outcome M1: Graduates must demonstrate the ability to apply the following to the solution of manufacturing programs to achieve manufacturing competitiveness: (a) materials and manufacturing processes; (b) product design process, tooling, and assembly; (c) manufacturing systems, automation, and operations; (d) statistics, quality and continuous improvement; (e) industrial organization and management.

I = Introduced R = Reinforced E = Emphasized

	Freshman			**Sophomore**			**Junior**			**Senior**		
Fall	Math 111	Coll Alg		MET 160	Materials	R	MET 375	Solid Model	E	ANTH 452	Globali-zation	
	MET 111	Orient I	I	MATH 252	Integral Calc		MFG 313	Mfg An & Plan	E	MFG 453	Robotics	E
	WRI 121	Eng Comp		MFG 314	Geo Tol	R	MET 315	Machine Des I	E	MFG 454	Thermal Systems	E
		Hum/ Soc Sci		PHY 201/221	Physics		MFG 341	Num Con Pr	E	MFG 461	Sr Proj	E
		Hum/ Soc Sci		MET 242	CAD II	R	MET 360	Materials II	E	WRI 327	Adv Tech Wr	
Wtr	CHE 101/4	Chem		ENGR 211	Statics	R	MET 326	Elec Power	E	MFG 462	Sr Proj II	E
	Math 112	Trig		Math 361	Stats	I	MFG 333	Stats for QI	E			
	MFG 120	Mfg Proc I	I	MFG 112	Mfg Proc	E	MFG 342	Comp Mach	E		Bus/ IMGT	
	WRI 122	Eng Comp		PHY 202/222	Physics		MFG 343	Tool Design	E		Mfg elec	
	MET 112	Orient II	I				MET 316	Mach Design	E		Mfg elec	
								Hum/ Soc Sci			Hum/ Soc Sci	
Spr	Math 251	Diff Calc		ENGR 236	Elec Circuits	R	IMGT 345	Eng Econ	R	ENGT 415	Occ Safety	R
	MFG 103	Welding	I	Math 362	Stats II		MFG 331	Ind Controls	E	ENGR 485	FE Exam	
	MET 241	CAD I	I	ENGR 213	Materials	R	MFG 344	Des Mfg Tooling	E	MFG 447	Lean Mfg	E
	SPE 111	Speech		WRI 227	Tech Report		SPE 321	Small Gr Team		MFG 463	Sr Proj III	E
		Hum/ Soc Sci		ENGR 266	Program/ Engineer	R	MGT 335	Bus/ IMGT	E		Hum/ Soc Sci	
											Mfg Elect	

Appendix B

Department Meeting Minutes
Review of ABET Accreditation results 02/03/15

Present: Jeffrey Hayen, John Glen Swanson, Joe Stuart, Sean Sloan, Irina Demeshko, Yanquin Gao, Don Lee, Brian Moravec, Steve Edgeman, David Culler, Sandra Bailey, Phone: Wahab Abrous, Nathan Mead and Wangping Sun

We need to submit a response to Charlie by 02/20 so an important part of our response is this meeting and it is being recorded and the minutes from this meeting and discussion are part of the response. Three of the items are common to MFG & MET. MFG has additional items. David passed out a handout.

Weaknesses that have been identified were for MET in particular although MFG has it mentioned. It really is about pre-req overrides and the justification and procedures and the reason that we give for the pre-req overrides and the forms we use.

Program educational objective we had a problem with our constituents. ABET says that if we list ABET and students as our constituents we need to ask for their input. So we should take them off the list as constituents or you have to ask them for their input.

SLO's are out of date EAC and ETAC over the last year they had gotten together and reworded them and words had been added in – need to include the new wording and need to incorporate them into rubric, score sheets and assessment of those items.

Do not co-mingle assessment data – separate MFG & MET into separate columns. Site specific data needs to be separated out. Over 100 pages had been combined and needs to be separated out.

Concern came from advising. People getting out of sequence, timing we offer our classes, number of times per year that we offer classes, number of students we have in the program makes it a challenge. Student progress, pre-reqs came up again. ABET talked with the MFG120 machining class who are mostly freshman. They had talked about needing quality advising, needed more help, probably not the best group for them to talk to.

They talked about teaching load and professional development came up as a concern. Had both under MFG & MET in Seattle facilities came up as a concern. Classrooms, offices, laboratories, equipment came up – Seattle has already started meeting to develop a response to include in the response to Charlie.

Students taking third or fourth year classes without having taken the pre-reqs. Students taking classes and co-requisites instead of pre-requisites. Students out of sequence or missing one to two classes for graduation and we won't give them an extension to get lined back up for graduation. Seemed reasons being listed are invalid. Maybe we should take a look at our pre-reqs to see if they should be removed or revised. ABET said these were invalid reasons on the forms. Course substitution forms where courses were listed but not found on transcripts. There are CPC forms that have been turned in but not processed. Sean brought up the idea of having a recommended list of pre-reqs instead of pre-req override forms. David suggested course waiver forms with three common reasons listed, i.e. course in process or will be taken over the summer. Brian suggested including will be challenging the course. Pre-req override forms will now require a department chair's signature. If you don't have the pre-requisite override form in, the registrar's office removes the student from the class. We need to inform all the adjunct faculty also. Seattle has 35 – 40 adjuncts. A big chunk of it goes back to the CPC revisions.

Going back to the Program Educational Objective we have MFG & MET PEOs and voted unanimously to remove students/ABET from Program Constituencies or we would have to ask them for input. The PEOs are directed more towards students five years after graduation.

We have old wording for our SLO’s for ETAC – someone has added words. We have to update rubrics, score sheets and assessment. All of them have changed except SLO K. A lot of work to be done.

MFG assessment needs to be broken out by program and site. In our response we should direct them to our website where everything is broken out separately.

Final concerns: Advising, curriculum, student progress, pre-reqs, professional development and Seattle facilities – all were mentioned under concerns.

Appendix C

MMET IAC Meeting Minutes 04/03/15

In Attendance: David Culler, Yanging Gao, Irina Demeshko, Sean Sloan, Steve Edgeman, Don Lee, Steve Martin, Steve Hamblin, Randy Pico, Dan Schuman, Joe Stuart, Charlie Jones; Barb Metcalf, Seattle: Marcus Harrell, Nathan Mead, Wahab, Brian Moravec, Wilsonville: John Vandecouvering , Wangping Sun, John Vandecouvering, Pat Kraft, Linda Browning.

John Vandecouvering officially handed over the chair position to Steve Hamblin and said he would do an excellent job. John was recognized for his 10 years as chair of the IAC and presented with a plaque an OIT sweat shirt. John's grandson has just been awarded a Presidential Scholarship to OIT and will be attending OIT on this scholarship in Mechanical Engineering.

Steve Hamblin: Minutes from last meeting will be emailed out.

John V. MECOP says industry still growing – steady growth. More companies joining organization. 79 students placed at Intel 50 some students placed at Freight Liner. Nothing on fire but steady growth.

Randy P. Hiring approx. 25 people per month. Need technologists – it is a mature workforce and many are retiring so need to hire to replace them. They will be seeing attrition over the next five years. They are growing strong and steady and have funding for the next five years. Seeing more activity with the community colleges. Especially EE & technologist and returning veterans. Advanced Bio-Engineering – Projection of 600 summer students 30 – 40. 200 academic coop program from schools – increased pool of scientist with a large concentration of Ph.D.s. Large amount of veterans being hired.

Steve M. Boeing 47 not hiring going down a little 67 increase in hiring 777X increase in hiring FAUB Fuselage Automated Upright Build 737 up in rate 737 max being introduced – increase in hiring 787 going up as well. They are coming out of South Carolina to Everett. Gone up from 3 to 7 a month. Opened a location in Seal Beach, CA. to support all in service planes that shifted from Everett. Large presence in California. 80 thousand people in the Puget Sound area. Keep workforce active and productive while retaining the knowledge.

Steve H. Last summer he left GE and moved to California to a company that makes two seaters for small aircraft. Develop an aircraft that looks more automotive. Engineering Manufacturing expertise in California. Headquarters are in L.A. Will be moving to Vacaville this summer. They will be designing a factory from scratch. They are consolidating to Vacaville using cutting edge technology with virtual factory layout. They already have 1500 aircraft orders with a good run of production with new technologies. Aviation aircraft kicking off F44 promote general aviation into the US. Cessna is still building with new technology – virtual screens, spin resistant – governing body creates the regulations and present to FAA.

Page two

Hiring trend – can't hire engineers fast enough – it is a challenge getting people to move to the area. Looking at Oregon Tech grads to lead the Stress group. Oregon Tech questions for industry?

Randy P. – Would like to hear from the instructors – what's new and exciting?

Sean – Received a grant for welding titanium and will teach the basic on how to weld and use titanium. Wants to push the technology here.

Would like to start an Oregon Laser Institute 3 – 6 kilowatt laser and start up optical in Wilsonville with a 10 watt optical laser and high optical robots. Possibly make it a certificate program. The funds will become available in 2016. Has 500K for toys. Still has to go thru senate yet. Wants to bring Klamath Falls into the research area.

Steve M. Robotics – hoping to offer certificate programs and a Master's program to have better taught students in robotics and metrology.

Steve H. Tech shift busy very much digital – uses CREO and MPSE. Wind-chill for PDM side MFG Engineering concerns how planes are built – used to CAD shots – Dataset flows manufacturing and into manuals. Digitally controlled laser tech for installing tools into aircraft.

Dan Pro E windmill uses everything Steve just said.

Steve M. Catia – velocity as built for 87.

David C. Cad Cam – Taught PLM to Master students – lightweight 3D data 10% of data being utilized by engineers. CREO/Catia under PLM program important area to continue to increase knowledge of PLM/PDM. Makes them more knowledgeable and marketable – cross paths works together for team work – missing link API – utilizes. Sharing data – real time trend gaining steam.

Steve H. Staffed enterprise resource leader CAD ERP wind-chill utilized – engineers doing non engineer work. Traditionally IT work – gap in communication. Develop student skills in this area.

Wangping CAD Catia administration encourages getting rid of CATIA. How does industry feel?

Rico P. – At Livermore they use Pro E – it would be nice if they had the training. Get the best deal you can and teach the students how to use it.

John V. Up and coming one is Solidworks – a lot of companies cannot afford Catia. From recent graduates what are companies using when they go out into the work field.

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Dan uses Cross the board – get the best financial deal – teach students how to use it.

John Agrees – best deal very important. Students know they will be exposed to multiple programs. Solid Works easy to use and apply.

Steve M. Not moving from CATIA.

Steve H. What is common software used?

David Solid works in the finite eliminate analysis CREO certified soli works campus 14 passes certification.

David Parametric Modeling – work done in CREO prepares you for everything – all packages fairly equal.

Randy P. Solid work packages about 30 they have 200 people who know solid works.

David Much more reliable - blurs line between software.

Steve E. Exposure to software was an edge in an interview.

Jeff Inquires why required to learn software? Randy wrote an exposé on why he believes CREO is best. Parametric modeling learn how to do it that way other software becomes easy to use.

Steve H. Have Barb distribute.

Irina Students struggle with CREO at the beginning but used it later.

Steve M. It is a software that becomes easier to use later on but not at the beginning

Steve H. Teach digital manufacturing - errors in reporting pushing up front.

Steve M. Do we still have FANUC robots?

Steve E. Steve is FANUC certified – attempting to get the ball rolling on FANUC Robots.

Steve M. Knowledge differentiates them from others.

Don FANUC is one of the best robots. What's going on with the controller? Have to know how to use kinematics. Combine vision technology. Using technology PLC and vision combine technologies required for MFG, MET & ME elective.

Steve E. Students learn hands on – understanding their function.

Joe As automation becomes more needed by industry in general should we consider expanding so it becomes at least an elective?

Page Four

John V. 3rd year MECOP Inc. placed 600 interns this year, 545 last year and 470 the year before. The demand is there. In application process for juniors – 600 applicants for 320 positions. Need instructors and advisors to work with students on professional polish. Interviews are a major part of hiring process. OIT doubled applicants from last year.

John 600 @ 20K ea. Program is strong. Added University of Portland this year so now have OSU, OIT, U of O, and PSU. Bring on more competition – the best students get the job.

Brian 600 X 20K is 12 mil. OIT topped 50 students – double 4 years ago – 30 out of MMET the rest out of other majors. Meeting Monday with new Director of Career Services from Wilsonville. Will work on mock interviews. Last year -0- applied from Wilsonville.

John Have a lot this year. Pushing 130 ME apps. They should say they are interested in Industrial Engineering and Manufacturing track to get a MECOP position. The demand is there – 330 will be the max. out of 600+ applicants.

Joe Do they apply in the spring?

Brian March 1st – 31st. Past application cut off. Posted on wall outside MMET, emailed, on the reader board and on the TVs around campus.

John To get in to MECOP high school grads must have at least a 3.9 GPA. 100 for that category – pre-placement guaranteed a spot in MECOP if they keep their grades up and stay in engineering.

Randy P. For interviews 1/7 criteria Grades/Technical Aspect/Problem Solving and questions about how do you work in teams? What are complicated Tech Problem you had? How do you choose corrective actions? Raised minimums for admitted to program.   Must have at least a 3.0 GPA looking for applicants who can be a team player, problem solver, etc.

John Retention is approximately 30% higher for MECOP applicants – returns are better

Randy A lot of statistics on that. What are the main geographical areas?

John V. Boeing is our largest northern member.

John Bakersfield, Seattle, Eastern Oregon with a few exceptions – would love to have Lawrence Livermore as a member. Should have MECOP students.

Randy P. Gets 200 of local students for free. Main Lawrence Livermore site is in Livermore, Tracy and Los Alamos. New test site in Nevada.

Steve M. University assessment next item. David is not here – Jeff has to leave. Latest data for student success rate, starting salaries?

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Joe Students talked about success in work field. Wood products doing well – Jeld Wen is going strong.

Wangping Small student population approx. 92 students 90% working students. Posting positions – success of students – very satisfactory.

Randy Where are we at with LEOT?

Charlie Laser option within EE program. A number of students are taking the option. They may be far enough along to graduate this year.

David Assessment – David is the Program Director for MET and Assessment. We had an ABET visit in October and have responded to ABET – final comments will come out in July. Wants to talk about policy for assessment – continuous improvement key aspects – participation in a comprehensive academic assessment activity. Stay in line with industry needs. We need quantative data from assessment. Students demonstrating proficiency each year. 3 - 4 overall institutional processes we can align with the mission and institutional objectives. Program Educational Objectives for IAB - MET & MFG similar in objectives – there is a difference between ME & MFG positions. We need to look at expectations of students 4 – 5 years out after graduation. Should include words implement and maintain in MET & MFG objectives. Any feedback or comments?

> IAC suggested we put “professional development” into the Educational Learning Objectives
> IAC (at the Wilsonville side) suggested they offer more daytime classes so that the ME & MET students can utilize the daytime resources in Wilsonville more.

Charlie Request by ABET to review objectives periodically with IAB.

Dan Why does school need to pursue professional development?

David – Careers in engineering, pursuit of certification in other areas, preparation for the professional exams, certification in Solid Works, are all part of the foundation for entering the workforce.

Sean Each year we should ping on alumni in indirect assessment by surveys.

Randy Are there enrichment programs offered to alumni?

Steve M. Boeing has a great relationship with OIT. We offer a Masters at Boeing in MFG, combine manufacturing and design skill sets. We could do a better job reaching out to alumni. Corrective action – they get great analytical skills – long history of OIT grads.

Sean Get to know students and they keep in touch.

Steve H. How do we improve our relationship with alumni?

Randy Encourage continued educational development.

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Steve E. One issue pointed out by ABET some of the assessments were missing components i.e. rubrics, score sheets, over all descriptions. Showed the old and new learning outcomes rubrics had to be changed to reflect changes in A –K. E did not change too much. M-1 & M-2 were rewritten. They are pretty broad and covers the whole program and a multiple of classes. Continuous improvement and industrial organization and management.

Wangping You are the expert – highlight the major differences between MFG & MET.

David Not much change- fairly general goals for graduates 4 – 5 years out.

Randy What was change between educational objectives?

David Curriculum maps explain difference between two programs. MET goes to mechanical. MFG programming tools – assessment schedule SLO A EAC & ETIC numbered differently – What class will be used for assessment? Which class needs examples collected. All assessment reports on website for last 5 years. Faculty completed a score sheet – there may be 5 different categories in each SLO. Assessment to improve program – reemphasize course improvement – updating SLO & Rubrics to better meet needs.

Steve Do you see improvement in identified areas?

David Sometimes identifying the expectations of the SLOs

John Glen Mission statement for ME is the same. Program Objective changes made from 2 years ago. Graduate studies – very similar. ABET changes procedure – IAC feedback is closing the loop for ABET.

John Send ABET info to the IAC for review.

Jim Barrett Joined also Brittany Miles.

Charlie John Glen writing self-study.

Don What is hiring rate at Boeing? Do we have data? A-K for ME has not changed. Differences thermal and mechanical systems.

John Can we send info in word document – David will convert to word.

Steve H. Any IAC comments?

Steve M. Likes the way ABET is going with the scoring.

Brittany Interact with industry. OIT is training students for real world scenarios in the work field. Industry thinking what they can do for summer internships and senior projects. Can Don talk about industry project?

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Don   Working on two projects. Last year received a grant from Oregon Best and reviewed what work had been done. Needs to find out more about trends, needs. They are doing very well. OIT wants to keep all the materials they purchased with grant money. Need to collaborate more – students don't worry about money.

Brittany Went with a company pulling wind and converting to energy as senior project. Need to do better job at working with industry. Can help with expectations of industry, equipment donations. Just one of the avenues students can gain access and internship opportunities. Capitalize on what we are doing. More emphasis on internships vs senior projects. They also are involved with elementary and middle schools. Working with STEP project – will send out packets.

Steve H. Where is the STEM hub?

Brittany In Wilsonville. Teachers posting to the Oregon Connection site. More hands on. Makes industry volunteers feel like they are more involved. Has video conference capabilities.

Joe Mention senior projects and internships. Important timing for senior projects. Need to start in fall so projects can be completed timely. Also get graduates involved.

Brittany Don't have labor or energy to pursue. Needs a company to donate a 3D printer – something that is open and doesn't have a hard dead line is easier to work with. Projects with shorter time lines easier for industry.

Don Internships give students a better chance of being hired at graduation. Request more internships.

Steve H. Where is PCC at?

Jim On a hiring trend – Technology is the new direction – Digital technology – structured light scanning – late add greater automation welding project related stuff

Joe Are you still focusing on lean?

Jim Lean is continuing but woven into the process now

Steve H New members from industry – are there areas we need to focus on?

Joe S. Wood products and composites – should work on Jeld Wen – other Omar Sliper

John V. Deimler, Freightliner, Leatherman, Gerber, Benchmate, Hallmark

Brian Students – Noah Anderson – send an email to brian – ask David to contact Boeing Portland

Joe Are there composites industry in ??? Marcella Minster to contact Accumed. How does the invite process work?

John V. Personal contact – reach out to Alumni

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Brian   For Portland – contact adjuncts

Barb Probably should send a letter for first invite.

Steve H. Are there any specific needs?

Brian Need heat curing oven – have been without one for several years

Steve H. What size oven?

Brian Any size 3 ½ by 6 ½ X 2' height – Ambush has a water pick and we may be able to work a deal.

Steve What kind of temp?

Joe 350 degrees

Joe We need foam for building molds

Steve H. What density?

Joe Higher density is better for building molds – more expensive but builds a better mold.

Wangping In process of purchasing hydraulic cleaners for GDT lab. Needs for labs – had Epson 1400 robot donated for automation. It is too large for Wilsonville lab and will probably move it to Klamath Falls. Students take machining courses at PCC. Needs a machining lab at Wilsonville campus.

Sean OJ System – hand held one for 30K – point at sub strength would identify steel HVAC – old DAV and modify as HVAC. Needs a diamond saw – lower speed needs higher speed camera to identify chemical flow – formula fluid distribution see what's going on in a freeze frame. It is 15K High speed opens up a lot of things we can show the students as to what is going on.

David   ABET accreditation visit – every six years we have a re-accreditation visit – put together a self-study for each year of our programs. A lot of work went into the October visit. Faculty development, lab equipment, supporting education and experience – totaled 5 days for 3 campuses – they attended classes and met with students and administration.

Findings have a ranking – weaknesses are pretty severe – concerns are a little lower – how do you do this? Etc. Pre-reqs not being done right. Courses are being taken out of sequence – co-requisites, etc. Boeing is a little different where everyone is already employed and have field experience. Confusion over difference between ME & MET SLOs are out of date with website/co-mingling of program data for ME/MET critiquing program, finding logistics. MFG/MET have low enrollment – finding ways to work around low enrollment and courses only offered in spring w/o putting students out of sequence. Upcoming visit for EAC coming in spring. Preview days are growing. Everything submitted on ABET is through the Dean's office.

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Charlie Did not have any deficiencies – noted faculty were well equipped and teaching well. People were passionate – hands on and applied was noted and appreciated.

Steve H. Announcements – Looking for permanent Program Director in Seattle – Wangping working hard in Wilsonville to grow themselves.

Jeff Klamath Falls is in need of adjuncts. Historically 2 IAB meetings per year or would it be better to have one a year? Is there an IAB requirement? ABET prefers two a year.

Charlie Would like to see it stay at two.

John V. Once a year may be too infrequent. Think spring and fall is a good thing. If we go to once a year and you miss one year you are out two years.

Steve M. Likes meeting with the students twice a year.

Pat K. Keep at two – it is hard to build relationships once a year.

Steve M. Invite students – it is great hearing about their projects and externships, etc.

Tentative date for fall meeting? October 16th, 2015 8 to noon. Invite a student.

David Culler OIT has been hosting Project Lead The Way for 10 years now. This year introducing the new elementary program LAUNCH.

Charlie Governance is changing – state board pulled out – 4 small universities under smaller system. Got approval for individual boards – Oregon techs President will now report to a single board. OUS will go away HEC Higher Education Coordinator new board takes over July 1, 2015. We now have solar panels on the hillside and a new power station. University going thru redo of Gen Ed programs – affected SLOs already. Dean of HAS retiring June 30th.

John V. What is board make-up?

Charlie 14 plus President (non-voting) 1 faculty, 1 non-teaching, industry, governing

Adjourned 2:12