Computer Engineering Technology
2013-14 Assessment Report

I. Introduction

In 1965, OIT was invited to join a Technical Education consortium sponsored by a number of major computer manufacturers. In response, OIT developed an Electro-Mechanical Engineering Technology program. This program was based on a mix of existing EET, MET, Math and other support courses. The name of the program was changed to Computer Systems Engineering Technology in 1973 in order to better represent the course material and capabilities of graduates. Course offerings were expanded, refined and renumbered using CST prefixes to reflect their computer systems content. Since that time, the program has continued to evolve in order to track new developments in the field and keep graduates current. As of this time, the program is only offered on the Klamath Falls campus. Enrollment in the department continued to be flat or up slightly relative to previous years, but, the number of students selecting to pursue a degree in CET was up a little from the previous year. Five students graduated with BS degrees and 6 students were awarded AE degrees in the June 2014 commencement. The results of the 2013 graduate survey showed a starting salary range of $58,500 to $90,000, with the average at $70,000. During the academic year, we obtained an additional 6 Mixed signal Oscilloscopes for

IV. expose our students to cross-disciplinary educational programs, and provide high tech industry employers with graduates in the computer engineering technology profession, a profession which is increasingly being driven by advances in technology.

CET Program Educational Objectives

Program Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

Alumni of the Computer Engineering Technology (CET) Bachelor Degree program may

Learning Outcome	2013-14	2014-15	2015-16
(1) an ability to identify, formulate, and solve computer engineering technology problems, including the specification design, implementation, and operation of systems and components, that meet performance, and quality requirements a timely manner;			
(2) an ability to design, conduct, and interpret experiments including applying the results to verify the system;			
(3) an ability to function effectively on teams;			
(4) an understanding of professional, ethical and social responsibility;			
(5) a recognition of the need for, and an ability to engage in long lea in, life			

Learning Outcome	2013-14	2014-15	2015-16
(1) an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components that meet performance and quality requirements in a timely manner;			

Student Learning Outcome #1 (B.S. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the specification, design, implementation, and operation of systems and components, that meet performance, and quality requirements in a timely manner.

Student Learning Outcome #1 (A.E. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components, that meet performance and quality requirements in a timely manner.

Direct Assessment #1
Data Collection Date: 11/14/13
Coordinator: Phong Nguyen

Students in CST 162 were given a set of specifications to a digital logic problem. They are next required to follow a specific method to come up with a design which they are to implement using gates. At the end, the students are asked to check a truth table to partially check functionality of the design. Student work was assessed in each of the following performance criteria as defined in the problem solving rubric.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Understanding Specifications	Number Scoring Excellent or Good	70%	93.8% (45 / 48)
Plan to Solve	ñ	ñ	91.7% (44 / 48)
Carry out Plan	ñ	ñ	72.9% (35 / 48)
Evaluating	ñ	ñ	77.1% (37 / 48)
Solution	ñ	ñ	91.7% (44 / 48)

Evaluation 11/15/13: Students exceeded expectations in all criteria

Actions 11/15/13: No actions are needed at this time

Direct Assessment #2
Data Collection Date: Winter 2014
Coordinator: Ralph Carestia

Students in CST 231 were given were given a serial adder structure and were to write the Verilog code for the design. They were evaluated with a problem solving rubric in the following categories: understanding of the problem, information gathering, developing a plan to solve (hierarchical structure), an ability to implement, evaluation of results (through simulation), and correctness of answer.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results

Understanding Specifications	Number Scoring Excellent or Good	70%	100% (10 / 10)
Info Gathering	ñ	ñ	100% (10 / 10)
Plan to Solve	ñ	ñ	70.0% (7 / 10)
Carry out Plan	ñ	ñ	90.0% (9 / 10)
Evaluating	ñ	ñ	60.0% (6 / 10)
Solution	ñ	ñ	60.0% (6 / 10)

Evaluation Winter 2014: Students did quite well in their ability to understand the problem, gather information, develop the Verilog code and carry out a plan to solve the problem. They were asked to evaluate the results via simulation but many did not produce the proper set of vectors for testing their results.

Actions Winter 2014: Additional emphasis will be placed on setting up simulation vectors to Properly setting up test vectors will help expose design flaws and also lead to a correct solution.

Direct Assessment #3
Data Collection Date: Spring 2014
Coordinator: Phong Nguyen

Students in CST 407 - Cryptography were given a quiz. In this quiz, the students are required to recognize and apply methods of encryption/decryption to provide a digital signature in order to prevent a ñman in the middleò attack using the RSA system. The quiz was scored using the OIT critical thinking rubric.
This assessment was done for the critical thinking ISLO. As critical thinking is related the problem solving, the results are included here. The data is from students in the hardware program only.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results

adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment

Student Learning Outcome #5 (B.S. and A.E. degrees): a recognition of the need for, and an ability to engage in, life-long learning.

Direct Assessment #1
Data Collection Date: Fall 2013
Coordinator: Troy Scevers

Students in CST 417 were given a standard assignment for writing an essay on the importance of lifelong learning in the field of embedded systems. The OIT Lifelong Learning rubric was used to assess these essays. The results are summarized below.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Lifelong learning	Number Scoring Proficient or Highly Proficient	70%	100% (4/4)
Professional societies and organizations	ñ	ñ	25% (1/4)
Credentials	ñ	ñ	0% (0/4)
Continuing education	ñ	ñ	75% (3/4)
Short- and long-term career plans	ñ	ñ	100% (4/4)

Evaluation 6/19/2014: Students did well in defining lifelong learning and their understanding of it. Student self-analysis included both strengths and weaknesses. Only one student mentioned a professional society and no one mentioned credentials at all. These aspects were not covered in the assignment well and had low visibility to the students. Continuing education was on the thoughts of most of the students in the form of either classes or seminars that they would be able to attend once out of school. All students had a good grasp of their career plans and path to get

Indirect Assessment #1
Data Collection Date: Spring 2014
Coordinator: Doug Lynn

3 of 3 CET seniors responding on the 2012-13 senior exit survey and 4 of 4 seniors responding on the 2013-14 senior exit survey question related to this learning outcome judged that they were adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment

Student Learning Outcome #10 (B.S. degree), #9 (A.E. degree): an ability to convey technical material through oral presentation and interaction with an audience.

Direct Assessment #1
Data Collection Date: 12/5/2013
Coordinator: Phong Nguyen

Students in CST 371 Junior project were asked to deliver a preliminary design review presentation in front of the JP class. Teams and individuals were assessed based on the OIT Public Speaking rubric. The results are summarized below.

Performance Criteria	Measurement Scale	Minimum

In CST 451, students presented their

		Acceptable Performance	
Introduction	Number Scoring Proficient or Highly Proficient	70%	85.7% (6/7)
Research	ñ	ñ	85.7% (6/7)
Purpose/Problem	ñ	ñ	85.7% (6/7)
Procedure	ñ	ñ	85.7% (6/7)
Data and Results	ñ	ñ	71.4% (5/7)
Conclusion	ñ	ñ	57.1% (4/7)
Grammar and Spelling	ñ	ñ	100% (7/7)
Attractiveness	ñ	ñ	100% (7/7)

and operation of systems and components, that meet performance, and quality requirements in a timely manner.

Appendix A: SLO Curriculum Maps

Outcome Assessment Points in BS Program H = Highly assessable M = Weakly assessable blank = Low to not assessable		(1) problem solving	(2) experiment	(3) teamwork	(4) ethical / social resp	(5) life-long learning	(6) calc, prob, discrete	(7) master skills + knowledge	(8) design, analysis, sim	(9) design, fab, test, improve	(10) oral presentation	(11) written presentation	(12) quality, proj. manage
Freshman Year	Eval. Cycle	Y1	Y2	Y3	Y3	Y2	Y1	Y3	Y2	Y1	Y3	Y2	Y3
CST 102	Intro to Comp Sys	M	M	M	M					M		M	
CST 162	Intro to Digital Logic	H	M				M						
Math 111	College Algebra												
WRI 121	English Comp												
PSY 201	Psychology												
CST 116 CST 130	C++ Prog I												

Outcome Assessment Points, BS Program
continued

(1) problem solving

(2) experiment

(3) teamwork

(4) ethical / social resp

(5) life-