Oregon Institute of Technology
Computer Systems Engineering Technology Department

Assessment Handbook

For

Computer Engineering Technology

Embedded Systems Engineering Technology

Software Engineering Technology

Programs

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Oregon Institute of Technology
Computer Systems Engineering Technology Department
Assessment Handbook

Introduction

It is the goal of the CSET department to provide educational programs that continue to meet the Program and Student educational objectives. In order to assure these goals are consistently being met, an assessment methodology has been developed and implemented across the department.

This handbook outlines the process required to complete all aspects of assessment in the Computer Systems Engineering Technology Department. It serves all three programs: Computer Engineering Technology (CET), Embedded Systems Engineering Technology (ESET) and Software Engineering Technology (SET).

All major questions concerning assessment in CSET department is addressed by this handbook. CSET faculty will use this handbook to compose assessment assignments. CSET program assessment coordinators will use this handbook to plan, schedule and record assessment activities as well as draft and submit the annual assessment report.

I. Assessment Chain of Command

The chain of command for all three programs in assessment follows:

Computer Engineering Technology (CET) Program (BS and AE)

CSET Department Chair

|

CET Program Director

|

OIT Director of Assessment

|

CET Program Assessment Coordinator (can be the same as Program Director)

|

CET Faculty

Embedded Systems Engineering Technology (ESET) (BS only)

CSET Department Chair

|

ESET Program Director (Klamath and Wilsonville)

|

OIT Director of Assessment

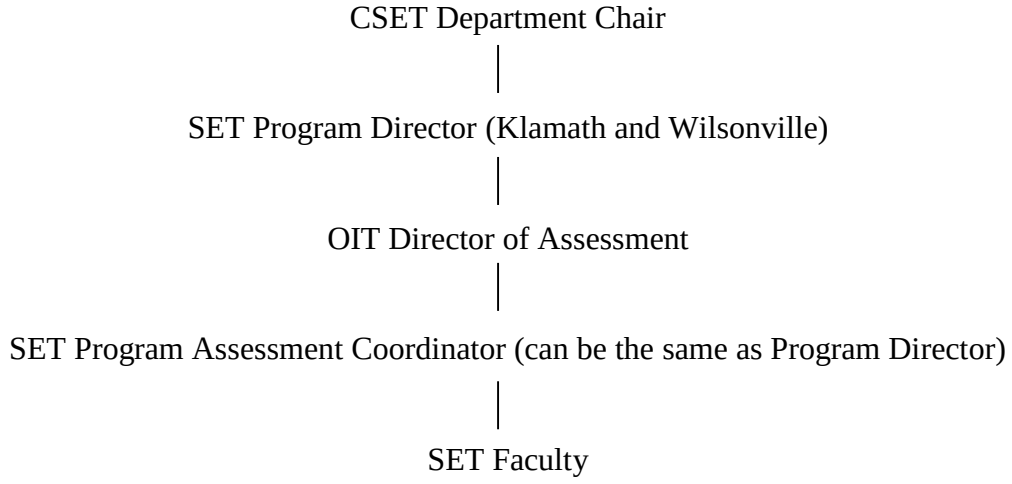
|

ESET Program Assessment Coordinator (can be the same as Program Director)

|

ESET Faculty

Software Engineering Technology (SET) (BS and AE)



PROGRAM CONSTITUENCY

Asides from chain of command, CSET assessment serves and requires input from the following constituencies.

Program Constituencies

- **Alumni:** The program's alumni are an important resource for the program. Many times alumni are consulted when changes within the program are contemplated. Also, because of our close ties with our students, many times students will contact us with suggestions on how to improve the program.

- **High-technology industry:** We have developed and maintained industrial relationships with such companies as Microsoft, Intel, Hewlett-Packard, Mentor Graphics, International Game Technology, Jeld-Wen, Xilinx and Altera. This is evident by the number of industrial contributions in the form of grants and equipment. Also, many of our students are employed by these companies either as interns or full-time employees. These companies provide invaluable support and feedback to the program.

- **Industrial Advisory Board:** One way the program maintains its high level of technological competence is through the valuable advice gained from our Industrial Advisory Board. This group, which meets at least once a year either by conference calls or in face to face meetings provides practical guidance from the point of view of industry.

II. Assessment Meeting Guideline

a. Make-up of meeting

Combined Department Assessment:

- All departmental faculty will be present unless properly excused.
- Wilsonville faculty will be present via distant meeting software.
- Attendance will be taken.
- Meeting facilitator will be the department chair or her/his representative.

Individual Program Meeting:

- All members of individual program faculty will be present unless properly excused.
- Appropriate Wilsonville faculty will be present via distant meeting software.
- Attendance will be taken
- Meeting facilitator will be the program assessment coordinator or her/his representative.

Industrial Advisory Board (IAB) Meeting:

- Members of the IAB will join the meeting via distant meeting software when they can during the scheduled time.
- All members of individual program faculty will be present for at least 15- 30 minutes dependent on teaching schedule unless properly excused.
- Attendance will be taken
- Meeting facilitator will be the department chair or her/his representative.

b. Items discussed in meeting

- Program missions, educational objectives and student learning outcomes.
- Assessment Assignment according to the three-year cycle schedule.
- Curriculum mapping
- Review criteria rubrics
- Assessment results from quarterly assigned assessment assignments.
- Closing The Loop results when compared to previous assessment.
- Minutes from previous meetings.
- Scheduling assignments.

c. Record of results of meeting

- Minutes of all meetings specified above will be taken. Previous meeting minutes will be disseminated and agreed upon before starting current meeting.
- Each program coordinator will keep a record of the minutes and attendance kept in all combined and individual program meeting.

III. Assessment Meeting Scheduling Guideline

a. Departmental Assessment Meeting Schedule

- Convocation Week: review program mission, education outcomes, student learning outcomes; wrap up previous year's assessment; discuss current year assessment goals.
- End of fall quarter: review fall assessment activities; preview winter assessment activities. Discuss implementation of recommendations from IAB senior exit surveys and alumni surveys.
- Spring quarter: review assessment results of the year with the IAB to gather ideas on improvements.

b. Program Assessment Meeting Schedule (CET, EST, CET separately)

- Fall quarter: discuss program assessment assignment for the year; discuss previous year's results including plan to implement actions for continuous improvement.
- Winter quarter: discuss program assessment assignment results for fall quarter.
- Spring quarter: late in quarter to discuss program assessment assignment results for winter and spring quarter and identify program strengths, weaknesses and actions for continuous improvement.

c. IAB Meeting Schedule

- Late fall quarter: review program mission, educational objectives and student learning outcomes.
- Spring quarter: review assessment results of the year with the IAB to gather ideas on improvements.

IV. Assessment Assignment Guideline

This section provides a guideline on how to prepare an assignment to assess a specific student outcome.

a. Assignment of student learning outcomes

Using the assignment matrix outlined in section VI, each program assessment coordinator will communicate individual faculty assignment by e-mail prior to each quarterly program assessment meeting. During each meeting, the assignment is finalized and recorded in meeting minutes.

b. What type of assignments is appropriate

A variety of assignment types is appropriate for assessment. The choice is often dependent on what was used in the last cycle. Typically, homework, quizzes, tests, labs, papers, projects, presentations can all be used for assessment purposes.

If a project is used for assessment, any combination of documentation, illustration, photo, video can be assigned and collected to assess.

c. How to prepare, grade and record assignment (rubric…)

Student learning outcomes will drive the content of the assignment. A rubric should almost always be used with each rubric criteria matching the student outcome.

For consistency in reporting for ESET and SET, the KFalls and WLV programs should standardize on the rubrics used and analysis of the results for each program outcome being assessed. We want to demonstrate consistency between locations, and be able to roll up the results into a single report.

The questions or paper grading specifications should be designed to match each rubric criteria. Each rubric criteria will be graded on a scale of 1-4 (1 - , 2 - , 3 - , 4 -).

All score will be tabulated and recorded. A percentage of students achieving 1, 2, 3 or 4 will be used to assess how well the students comprehend and perform on each rubric criteria.

An example is hereby provided to clarify this section.

Assessment Activity #1 (AE 4)*- a recognition of the need for, and an ability to engage in life-long learning *Klamath

Assignment:

Write a paper on lifelong learning discussing the short-term and long-term goals of your education in the next forty years. Make sure to include your thoughts on lifelong learning and professional development.

Rubric:

Rubric for Lifelong Learning

Performance Criteria	Limited or No Proficiency (1)	Some Proficiency (2)	Proficiency (3)	High Proficiency (4)	Score
1. Lifelong learning	Fails to identify the need for "lifelong learning" and/or omits discussion of their own learning and relevant examples.	Misses important elements in discussing "lifelong learning," applying concepts to their own learning or providing a relevant example.	Defines the concept of "lifelong learning." Demonstrates self-awareness by accurately identifying strengths/ weaknesses in their own ability to learn independently. Gives a relevant example.	Defines the concept of "lifelong learning" and its importance. Demonstrates self-awareness by accurately discussing strengths/ weaknesses in their own ability to learn independently. Gives relevant examples.	
2. Professional Development	Fails to identify professional development opportunities.	Discusses professional development opportunities that are either inappropriate or irrelevant.	Identifies appropriate professional development opportunities.	Identifies and thoroughly discusses appropriate professional development opportunities.	
3. Short- and long-term career plans	Vaguely describes career goals and/or does not include a plan to meet them.	Career goals after graduation do not include both long and short term plans and/or the plan is unrealistic.	Describes short- and long-term career goals after graduation. Includes a realistic plan to meet these goals.	Describes short- and long-term career goals after graduation. Includes a realistic, thorough, and thoughtful plan to meet these goals.	

Result Documentation:

Course used for assessment: CST 105 – Introduction to Computer Systems III
Instructor/Evaluator: Phong Nguyen (Klamath)
Student level: Freshman
Term of administration: Spring 2014
Number of students: 23
Assessed work: Paper
Type of assessment: Direct

Data Collection Date: 4/1/14 Coordinator: Phong Nguyen

Assessment Method: A paper on lifelong was assigned. Each individual was required to fulfill the specifications of a rubric when writing this paper. The rubric was based on the notions of lifelong learning.

BS H assessment outcome results for CST 105

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Lifelong learning	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	21 of 23 91.3%
Professional Development	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	15 of 23 65.21%
Short- and long- term career plans	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency	Proficiency (3)	10 of 23 43.47%

		(3)/ High Proficiency (4)		

Data Collection Date: 4/8/2014 Coordinator: Phong Nguyen

Lifelong Learning 1-4	Professional Development 1-4	Short and Long Term Goals 1-4
3	3	3
3	2	2
3	2	3
3	2	2
3	3	3
3	3	2
3	3	2
3	2	2
3	4	2
3	3	3
4	3	3
3	3	3
2	3	2
3	2	1
3	2	2
3	3	3
2	1	1
4	3	2
3	2	2
3	4	3
4	3	4
3	3	2
4	3	3

Evaluation 4/18/14

Freshman level students are asked to write about lifelong learning to assess what they do not know at a low level class. As expected, the perceptions on this topic are all around immature. Next time around, the standard for freshman in an associate degree for lifelong learning might be reconsidered. Or perhaps, the class to assess this in should be in late sophomore year.

Actions (4/18/1)

The standards and change of class to assess lifelong learning will be considered next year after discussions with the department.

d. How to deliver the assignment

- All assessment criteria/measurements should be done in CST courses. For example, globalization and discrete mathematics should be assessed in one of our department courses and not the ANTH or MATH course. It can be taught there, but should be assessed in one of our department's courses.
- The criteria being assessed should be part of a regular assignment of the course, and not a special assignment just for assessment purposes.

V. Assessment Data and Student Samples Folder

- All completed assessment data in an academic year will be kept together by each program in a separate folder. In a seven year ABET evaluation cycle, there will be seven folders showing assessment data and student samples.
- For all programs, a shared location (secure drive or sharepoint for electronic, folder for non-electronic) will store all assessments, materials and results, first by location and then by outcome. This is the syllabus, assessment assignments and sample student work from those assignments.
- Each assessed assignment will be placed in a section and will contain the following items.
    - Course name
    - Location (KFalls or WLV)
    - Instructor
    - Syllabus
    - Assignment
    - Rubric
    - Tabulated results of outcome assessments (Section IV c of this Handbook)
        - Score sheet
        - All student work
    - A range of work samples (labeled best, medium, low) separated from all student work

VI. Program Mission, Educational Objectives and Student Learning Outcomes

- **Mission Statement**
  - **Institutional Mission Statement**

The Oregon Institute of Technology (OIT) mission statement can be found on the website: http://www.oit.edu/faculty-staff/oit-2017/oit-mission-statement
The mission statement:
Oregon Institute of Technology, a member of the Oregon University System, offers innovative and rigorous applied degree programs in the areas of engineering, engineering technology, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate hands-on learning environment, focusing on application of theory to practice. Oregon Tech offers statewide educational opportunities for the emerging needs of Oregon's citizen and provides information and technical expertise to state, national and international constituents.

- **Program Mission Statement, educational objectives and student learning outcomes**

The program mission statement, educational objectives and student learning outcomes for the three baccalaureate programs are located on the OIT websites.

http://oit.edu/faculty-staff/provost/learning-outcomes/cset/bs-computer-engineering-technology

http://oit.edu/faculty-staff/provost/learning-outcomes/cset/embedded-systems-engineering-technology

http://www.oit.edu/faculty-staff/provost/learning-outcomes/cset/software-engineering-technology.

The program mission statement, educational objectives and student learning outcomes for the two associate programs are located on the OIT websites.

http://oit.edu/faculty-staff/provost/learning-outcomes/cset/ae-computer-engineerng-technology

http://oit.edu/faculty-staff/provost/learning-outcomes/cset/swae

Program Educational Objectives

Every program in the CSET department has a set of defined program educational objectives (PEOs). PEOs are broad statements that describe what graduates are expected to attain within a few years after graduation, and are based on the needs of the program's constituencies. PEOs are consistent with the mission of the institution, the needs of the program's various constituencies, and the ABET accreditation criteria. The PEOs for every program are published both in the catalog as well as the program website, so that they are easily accessible to the general public. Additionally, the PEOs are periodically reviewed by the different program constituencies, and revised as needed to ensure they stay in alignment with the industry needs and trends. The PEOs are typically evaluated every three years, but evaluation may happen more often based on different factors (e.g., request from constituents, graduate or student survey results,
etc.) The process for review of the program educational objectives is a cyclical process involving multiple constituents. At the annual CSET Convocation meeting in Fall, the CSET faculty review the PEOs for each program in light of the results from the assessment activities conducted the previous year (i.e., direct assessment of student outcomes, as well as indirect assessment from senior exit survey), results of graduate surveys provided by Career Services, the input gathered from IAB members and employers during the previous academic year, as well as any changes to the institutional or college mission, or the ABET criteria (if any have occurred). Based on the discussion, the CSET faculty may approve to make no changes to the program PEOs, or make recommendations for proposed changes. The results are determined by a simple majority vote.
During the academic year, one or two meetings are held with the IAB (typically in Fall and/or Spring). These meetings provide an opportunity for faculty to present program updates, assessment results, etc., as well as gather input from the IAB to inform strategic direction of the program. If changes to the PEOs have been proposed by the faculty at the Fall Convocation meeting, these are discussed with the IAB members. The IAB members may approve the changes or propose alternative changes. The results are determined by a simple majority vote.
As part of the assessment cycle, the program faculty have a Closing-the-Loop meeting during Spring term. At this meeting, the faculty discuss the results of the assessment activities carried out during that academic year, and also have an opportunity to review the PEOs. If any changes to the PEOs have been approved by the faculty and the IAB, these are announced at the Closing-the-Loop meeting and included in the annual Assessment Report, which is submitted to
the Director of Assessment for the university, and if approved, the new PEOs are published on the corresponding program website, and submitted for inclusion in the catalog for the following academic year.

Student Learning Outcomes

Every program in the CSET department has a set of student outcomes (SOs) that prepare graduates to attain the program educational objectives. SOs describe what students are

expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students attain as they progress through the program. For ABET accredited programs, the student outcomes are closely aligned with the outcomes for the corresponding accreditation commission associated with that program (EAC for engineering programs, ETAC for engineering technology programs).
The process for review of student outcomes is parallel to the process of review of PEOs. At the annual CSET Convocation meeting in Fall, the CSET faculty review the SOs for each program in light of the results from the assessment activities conducted the previous year, results from graduate and student surveys, the input gathered from IAB members and employers during the previous academic year, as well as any changes to the institutional or college mission, or the ABET criteria (if any have occurred). Based on the discussion, the CSET faculty may approve to make no changes to the program SOs, or make recommendations for proposed changes. The results are determined by a simple majority vote.

During the academic year, one or two meetings are held with the IAB (typically Fall and/or Spring). If changes to the SOs have been proposed by the faculty at the Fall Convocation meeting, these are discussed with the IAB members. The IAB members may approve the changes or propose alternative changes. The results are determined by a simple majority vote. As part of the assessment cycle, the program faculty have a Closing-the-Loop meeting during Spring term. At this meeting, the faculty discuss the results of the assessment activities carried out during that academic year, and also have an opportunity to review the SOs. If any changes to the SOs have been approved by the faculty and the IAB, these are announced at the Closing-the-Loop meeting and included in the annual Assessment Report, which is submitted to the Director of Assessment for the university, and if approved, the new SOs are published on the program website, and submitted for inclusion in the catalog for the following academic year.

VII. Assessment Scheduling Guidelines To Cover All Student Learning Outcomes

Program student learning outcomes drive which assessment assignments are scheduled each year. For example, for the software program, since there are A-K student learning outcomes called A-K, there are in tandem categories of assessment assignments labeled BS#A-BS#K. These outcomes are scheduled over a period of three years. Each year a category is required to be assessed, two direct and one indirect assessment assignments are performed. The matrix below shows an example of how the SET BS and AE program are scheduled.

BS#A – BS#K

Program Learning Outcomes A-K		**12-13**	**13-14**	**14-15**	**15-16**	**16-17**
A: an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities		**X**			**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				**X**		

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;		**X**			**X**	
E: an ability to function effectively as a member or leader on a technical team		**X**			**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**			**X**
H: an understanding of the need for and an ability to engage in self-directed			**X**			**X**

continuing professional development						
I: an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity		**X**			**X**	
J: a knowledge of the impact of engineering technology solutions in a societal and global context			**X**			**X**
K: a commitment to quality, timeliness, and continuous improvement		**X**			**X**	

AE#A-AE#I

Program Learning Outcomes A-I		**12-13**	**13-14**	**14-15**	**15-16**	**16-17**
A: an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.		**X**			**X**	
B: an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.				**X**		
C: an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.				**X**		
D: an ability to function effectively as a member of a technical team.		**X**			**X**	
E: an ability to identify, analyze, and solve narrowly				**X**		

defined engineering technology problems.						
F: 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**			**X**
g: an understanding of the need for and an ability to engage in self-directed continuing professional development.			**X**			**X**
H: an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity		**X**			**X**	
I: a commitment to quality, timeliness, and continuous improvement		**X**			**X**	

The same assignment scheduling guideline is used for the other two programs. Past matrixes should be used to base current matrix on. Past three year cycle matrixes are contained in annual assessment reports for all three programs. Such reports can be found in the following website: http://oit.edu/faculty-staff/provost/learning-outcomes/cset

VIII. Student Learning Outcomes Mapping To ABET A-K (BS Degree), A-I (AE Degree) To Program Educational Objectives

a. Bachelor Programs

The outcomes of the three baccalaureate programs were determined much in the same manner as the program objectives. The difference is that the ABET A-K outcomes map identically to the student learning outcomes. Any substantive changes will also be submitted to the Industrial Advisory Board for approval.

Program Outcomes

The software student learning outcomes are provided here to better follow the example.

http://www.oit.edu/faculty-staff/provost/learning-outcomes/cset/software-engineering-technology

Software Engineering Technology baccalaureate graduates will have demonstrated:

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; and

k. a commitment to quality, timeliness, and continuous improvement.

b. Associate Programs

The outcomes of the two associate degree programs were determined much in the same manner as the bachelor programs. The difference is that ABET A-I outcomes for Associate Degrees were used to determine the outcomes instead of A-K for bachelor degree.

Program Outcomes

To best show the example, the software associate program student learning outcomes are shown here.

http://www.oit.edu/faculty-staff/provost/learning-outcomes/cset/swae

Software Engineering Technology associates graduates will have demonstrated:

a. an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.

b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.

c. an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.

d. an ability to function effectively as a member of a technical team.

e. an ability to identify, analyze, and solve narrowly defined engineering technology

problems.

f. 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.

g. an understanding of the need for and an ability to engage in self-directed continuing professional development.

h. an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity.

i. a commitment to quality, timeliness, and continuous improvement.

IX. Mapping of CSET Courses to Student Learning Outcomes

In order to ease the choice of appropriate courses to schedule assessment assignments, matrixes mapping CSET courses to student outcomes are included in annual reports (Section X of this handbook). An example of such a matrix is provided below.

BS#H, AE#G - a recognition of the need for, and an ability to engage in life-long learning				
Course	**Teach**	**Eval**		
CST 102 – Introduction to Computer Systems	L	L		**E**- Extensive - a major focus of the course
CST 105 – Introduction to Computer Systems III	L	L		
CST 116 – C++ Programming I				**M**- Moderate - subject explicitly discussed in and class materials provided
CST 126 – C++ Programming II				**L**- Little explicit discussion - student may gain the skill due to activities
CST 130 – Computer Organization				
CST 131 – Computer Architecture				
CST 136 – Object Oriented Programming with C++				
CST 162 – Introduction to Digital Logic				
CST 211 – Data Structures		L		
CST 223 - Concepts of Programming Languages				
CST 229 – Grammars				
CST 236 - Software System Testing				
CST 238 – GUI Programming		M		
CST 240 – Unix				
CST 250 – Assembly Language Programming				
CST 276 - Software Design Patterns				
CST 316 – Software Process Management		E		
CST 326 – Software Design and Implementation I		E		
CST 336 – Software Design and Implementation II		E		
CST 320 – Compiler Methods				
CST 324 – Database Systems and Design		L		
CST 334 – Project Proposal				
CST 352 – Operating Systems		M		
CST 412 – Senior Development Project		E		
CST 422 – Senior Development Project		E		
CST 432- Senior Development Project		E		
CST 415 – Computer Networks		E		

X. Guide to Completing the Annual Assessment Report

Each year, an annual assessment report for each program (CET, ESET, SET0 is required to be submitted to the institution Director of Assessment. Samples of all three program annual reports are available through the website: http://oit.edu/faculty-staff/provost/learning-outcomes/cset

A manual on how to complete this extensive annual report is provided in Appendix A.

APPENDIX A

Oregon Institute of Technology
Computer Systems Engineering Technology Department
Annual Assessment Report Handbook

This handbook is a guideline outlining the process required to complete the annual CSET assessment report. CSET program assessment coordinators will use this guideline to draft and submit the yearly assessment report. All assessment assignments and schedule in this report must be made early in fall quarter and announced in an assessment meeting where minutes are kept showing consensus by program faculty. During the year, the program assessment coordinator will monitor assessment progress according to the assessment schedule and ensure that all assessment assignments meet the guideline set forth. Prior to submission by the end of spring quarter, each report (SET, CET, ESET) must be discussed in an assessment meeting where final consensus must be recorded. Final submission will be made to the Director of Assessment.

I. Introduction, Enrollment, Retention and Employment Data

Introduction

For introduction, use the following sample paragraph. Insert appropriate history for EST and CET programs. Disregard Associate degree for ESET.

> *"The Software/Computer/Embedded Systems Engineering Technology (SET/CET/ESET) program was implemented in Klamath Falls in 1984 and was initially accredited by TAC of ABET in 1991. The Portland program was established in Fall 1996 under the same accreditation and is currently located on the Wilsonville campus. The Associate degree was accredited by TAC of ABET in 2009. The program has continuously evolved as industrial changes have warranted."*

ENROLLMENT, RETENTION, EMPLOYMENT DATA

By the first half of spring quarter, the Director of Assessment will forward to all program assessment coordinators enrollment, retention and employment data. Upon receipt of data, appropriate program assessment coordinator should insert it into the example tables below.

A. Enrollment

Table 1.1 shows the number of students that have listed Software Engineering Technology (SET) as their major at the end of Week 4, Fall Term ____.

Table 1.1 SET Enrollment Data Fall ___

Campus	Frosh.	Soph.	Junior	Senior	Masters	PostBac	NonAdmit-UG	NonAdmit-G	Total
Klamath									
Wilsonville									
Totals									

Table 1.2 shows the number of students that have designated that they are pursuing a concurrent degree with the Computer Engineering Technology (CET) program as their major at the end of Week 4, Fall Term ____.

Table 1.2 Concurrent SET and CET Enrollment Data Fall 2013

Campus	Frosh.	Soph.	Junior	Senior	Masters	PostBac	NonAdmit-UG	NonAdmit-G	Total
Klamath									
Wilsonville									
Totals									

B. Retention

The following retention data in Table 1.3 shows the percentage of students that returned to the program for their second year. This is data is only for the Klamath Falls campus.

Table 1.3 Klamath Retention Data

	Returning		
	N	Y	Total
2009	10	63	73
	13.70%	86.30%	100.00%
2010	20	54	74
	27.03%	72.97%	100.00%
2011	13	61	74
	17.57%	82.43%	100.00%
2012	????	????	????

C. Employment Data

The data shown in Table 1.4 shows the data collected on the student graduate survey. This information is for the Bachelor degree only.

Table 1.4 Bachelor Degree Employment Data

Campus	Year	Number of Respondents	Full-time Employed	Employment Not Reported	Average Salary	Maximum Salary
Klamath						

The data shown in Table 1.5 shows the data collected on the student graduate survey. This information is for the Associate degree.

Table 1.5 Associate Degree Employment Data

Campus	Year	Number of Respondents	Full-time Employed	Employment Not Reported	Average Salary	Maximum Salary
Klamath						

II. Mission, Objectives and Student Learning Outcomes

Annually, each program must conduct an assessment meeting to review and approve its program mission, objectives and student learning outcomes. The mission statement, objectives and program outcomes for the baccalaureate program are located on the OIT website at www.oit.edu/provost/learningoutcomes/cset/swbs. The associate program's mission statement, objectives and program outcomes are located at www.oit.edu/provost/learningoutcomes/cset/swae.

Minutes must be kept of this meeting and all decisions regarding program mission, objectives and student learning outcomes must be recorded in this section of the annual assessment report. Comparison of student outcomes must also be made and recorded annually.

Bachelor Program Mission

Copy the program missions from www.oit.edu/provost/learningoutcomes/cset/swbs to here.

Bachelor Program Educational Objectives

Copy the program educational objectives from www.oit.edu/provost/learningoutcomes/cset/swbs to here.

Bachelor Program Student Learning Outcomes

Copy the program student learning outcomes from
www.oit.edu/provost/learningoutcomes/cset/swbs
to here.

Associate Program Mission

Copy the program missions from www.oit.edu/provost/learningoutcomes/cset/swae
to here.

Associate Program Educational Objectives

Copy the program educational objectives from www.oit.edu/provost/learningoutcomes/cset/swae
to here.

Associate Program Outcomes

Copy the program outcomes from www.oit.edu/provost/learningoutcomes/cset/swae
to here.

Three-Year Cycle for Assessment of Student Learning Outcomes

The department assesses the program educational objectives and student learning outcomes on a three-year cycle. During the six-year ABET cycle, the objectives and learning outcomes will thus be fully assessed twice. A matrix showing this cycle must be provided in this section to outline the assessment assignments of the past year, current year and next 4 years. Example matrixes for BS and AE degrees is shown below.

Bachelor Degree Assessment Cycle

Program Learning Outcomes A-K		**12-13**	**13-14**	**14-15**	**15-16**	**16-17**
A: an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities		**X**			**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		**X**			**X**	

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		**X**			**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**			**X**
H: an understanding of the need for and an ability to engage in self-directed continuing professional development			**X**			**X**
I: an understanding of and a commitment to address professional and		**X**			**X**	

ethical responsibilities including a respect for diversity						
J: a knowledge of the impact of engineering technology solutions in a societal and global context			**X**			**X**
K: a commitment to quality, timeliness, and continuous improvement		**X**			**X**	

Associate Outcome Assessment Timeline

Program Learning Outcomes A-I		**12-13**	**13-14**	**14-15**	**15-16**	**16-17**
A: an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities.		**X**			**X**	
B: an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.				**X**		
C: an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.				**X**		
D: an ability to function effectively as a member of a technical team.		**X**			**X**	
E: an ability to identify, analyze, and solve narrowly				**X**		

defined engineering technology problems.						
F: 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**			**X**
g: an understanding of the need for and an ability to engage in self-directed continuing professional development.			**X**			**X**
H: an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity		**X**			**X**	
I: a commitment to quality, timeliness, and continuous improvement		**X**			**X**	

Associate Degree Assessment Cycle

IV. Summary of Assessment Activities

From the three years cycle matrix above, the current outcomes are extracted, courses/instructors are chosen and specific assignments are given to assess the outcomes. Klamath Falls and

Wilsonville campuses will need to derive separate matrixes and assignments. For each outcome, attempt to assign two direct and one indirect assignments. Example tables below outline the assignments for Klamath Falls and Wilsonville campuses. Program assessment coordinators can use this example as a guideline and make the appropriate assignments according to the cycle.

Before making the assignments, coordinators need to review past assessment results to make sure to close the loop. If classes need to be changed due to previous comments or changes in the current year, the changes need to be announced and agreed to in an assessment meeting and recorded.

All assignments need to follow the assessment assignments guidelines which need to be reiterated at annual assessment meetings. These guidelines are shown in Section IV of the CSET Assessment Handbook.

	Bachelor Degree			
#	Learning Outcome	Direct#1	Direct#2	Indirect
H	a recognition of the need for, and an ability to engage in life-long learning	Course- cst415 Instructor-Long Assignment- Lifelong Learning Paper **COMPLETED F'13**	Course- cst105 Instructor- Nguyen Assignment-Life Long Learning Paper **COMPLETED SP'14**	Exit Survey- **COMPLETED, Fall '13**
G	an ability to convey technical material through oral presentation and interaction with an audience	…	…	…
	Institution			
	Critical Thinking	Course- cst407 Instructor-Nguyen Quarter- Spring Assignment-Crypto Project **COMPLETED SP'14**		
	Associate Degree			
		Direct#1	Direct#2	Indirect

G	a recognition of the need for, and an ability to engage in life-long learning		Course- cst105 Instructor- Nguyen Assignment- Paper **COMPLETED SP'14**	**Survey- COMPLETED F '13**
F	an ability to communicate through oral presentation and interaction with an audience	Course- cst238 Instructor-Bishop Quarter- Spring	Course- cst105 Instructor- Nguyen Quarter- Spring Assignment- Proposal Presentation	Survey- **COMPLETED F '13**
	an ability to convey technical material through written reports which satisfy accepted standards for writing style	…	…	…

Table 4.1 Klamath Falls Campus Assessment Assignments for 2013-2014

	Bachelor Degree			
#	Learning Outcome	Direct#1	Direct#2	Indirect
H	a recognition of the need for, and an ability to engage in life-long learning	Course- cst415 Instructor- Tom Findley Assignment- Paper **COMPLETED SP'14**	Course- cst422 Instructor- Bockelman Assignment- Lifelong Learning Paper **COMPLETED W'14**	Klamath Falls Campus Exit Survey Sufficient
G	an ability to convey technical material through oral presentation and interaction with an audience	**…**	…	…
	Critical Thinking			
	Associate Degree	N/A For Wilsonville		

Table 4.2 OIT Wilsonville Campus Assessment Assignments for 2013-2014

ASSESSMENT RESULTS

For each assessment assignment for the year, the instructor needs to review the same assignment three years back to see if closing the loop is necessary. Next, she/he should consult Section IV of the CSET Assessment Handbook to come up with, conduct and record the assignment. The record for all completed assessments will be inserted in this section. The example below shows one such set of data: two direct and one indirect assessment. The example shows only Klamath Falls. Wilsonville data needs to be included here also (two directs and one indirect).

BS H/AE G - a recognition of the need for, and an ability to engage in life-long learning

Assessment Activity #1 (BS 6)- Klamath

Course used for assessment: CST 415 – Computer Networks
Instructor/Evaluator: James Long (Klamath)
Student level: Senior
Term of administration: Fall 2013
Number of students: 8
Assessed work: Essay
Type of assessment: Direct

Assessment Method: Computer networks is a course on network theory and implementation through the TCP/IP protocol suite. Students were given a standard assignment for writing an essay on the field of software systems engineering and expectations related to the professional field. The OIT Lifelong Learning Rubric was used to evaluate the essays. Results are shown in Table below.

BS H assessment outcome results for CST 415

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Lifelong learning	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	7 of 8 87%
Professional Development	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	6 of 8 75%
Short- and long- term career plans	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	5 of 8 62%

Data Collection Date: 11/18/2013 Coordinator: Jim Long

Evaluation of results: The placement of the assignment in CST 415 produces an artificial circumstance when combined with the Technical Writing assessment. Students are asked to write a technical report in a class which is based on lecture and lab/project based network protocol stack implementation. The end result of adding such a large assignment to an already heavily loaded class is students did not do a good job on either form of the assignment – e.g. either lifelong learning or technical writing.

Actions: Next time this assessment is run, the lifelong learning assignment should be done in CST 415 with a focus on how students can be prepared for the rapidly changing force of network communications. The technical writing PSLO needs to be done in CST 326. In this class, students are already producing a technical report as part of the standard workload.

Assessment Activity #2 (BS 6HAE G)- Klamath

Course used for assessment: CST 105 – Introduction to Computer Systems III
Instructor/Evaluator: Phong Nguyen (Klamath)
Student level: Freshman
Term of administration: Spring 2014
Number of students: 23
Assessed work: Paper
Type of assessment: Direct

Data Collection Date: 4/1/14 Coordinator: Phong Nguyen

Assessment Method: A paper on lifelong was assigned. Each individual was required to fulfill the specifications of a rubric when writing this paper. The rubric was based on the notions of lifelong learning.

BS H assessment outcome results for CST 105

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Lifelong learning	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	21 of 23 91.3%
Professional Development	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	15 of 23 65.21%
Short- and long- term career plans	Written Assignment	No Proficiency (1)/ Some Proficiency (2)/ Proficiency (3)/ High Proficiency (4)	Proficiency (3)	10 of 23 43.47%

Data Collection Date: 4/8/2014 Coordinator: Phong Nguyen

Evaluation 4/18/14

Freshman level students are asked to write about lifelong learning to assess what they do not know at a low level class. As expected, the perceptions on this topic are all around immature. However, they will be given a chance in the next 2-3 years to mature.

Actions (4/18/1)

In 3 years when some of these students become seniors in the major, they will be given the same paper to assess their maturity and the classes that assisted them in learning lifelong learning.

Assessment Activity #3 (BS H/AE G)

Method used for assessment:	Exit Survey
Instructor/Evaluator:	Phong Nguyen
Student level:	Senior Graduates
Term of administration:	Graduating Class 2013
Number of students:	31/29
Assessed work:	Survey
Type of assessment:	Indirect

To assess this outcome for the institution, graduating students of 2013 were asked to complete an exit survey, the result which pertains to BS 6/AE 4 is shown below

PROFICIENCY SURVEY

#	Question	No/Limited Proficiency	Some Proficiency	Proficiency	High Proficiency	Total Responses	Mean
6	Lifelong learning	0.00%	12.90%	54.84%	32.26%	31	3.19

Percent of graduates grading themselves proficient or above: 87.10%

AGREE SURVEY

#	Description	Strongly Disagree	Disagree	Agree	Strongly Agree	Total Responses	Mean
6	A recognition of the need for, and an ability to engage in life-long learning.	0	2	14	13	29	3.38

V. Summary of Student Learning Outcomes Results

Closing the loop is the reason behind this section. For every assessment in the previous section, a summary of the result of the same assessment in the last cycle (three years ago) and a summary of the current cycle must be provided. Following the two summary, a section called "Closing The Loop" will summarize the improvements made in this current cycle compared to the last cycle. An example of these sections are hereby provided.

A. 1) BS H - a recognition of the need for, and an ability to engage in life-long learning

PREVIOUS RESULTS:

CST-415 Computer Networks Prof. James Long Fall 2010

Strengths: Students understood the importance of being able to continue learning after they have completed their initial education.

Weaknesses: Although students recognized the need for continual self-learning activities, they were not convinced that advanced education or additional credentials might be necessary.

Action Items: None at this time.

No AE level assessment in 2010-2011 cycle.

CURRENT RESULTS:

CST-415 Computer Networks Prof. James Long Fall 2013

Strengths: None noted this time

Weaknesses: Due to heavy load in class, assessing both BS#6 and BS#9 in CST 415 on same assignment was deemed impractical.

Action Items: Next time this assessment is run, the lifelong learning assignment should be done in CST 415 with a focus on how students can be prepared for the rapidly changing force of network communications. The technical writing PSLO needs to be done in CST 326. In this class, students are already producing a technical report as part of the standard workload.

AE G - a recognition of the need for, and an ability to engage in life-long learning

CST 105 Computer Systems Engineering III

Strengths: freshman begins thinking about an important topic early in education cycle
Weakness: Immaturity shows in writing about lifelong learning
Action Items: Same students will be flagged and reassessed when they are seniors

VI. CLOSING THE LOOP FROM 2010-2011 RESULTS

Need to show in this section changes resulting from assessments, actions from last year, implementation, results.

1. Weakness in 2010-11CST 415 of students not convinced of the necessity of advanced degrees or credentials was not assessable due to assignment scope and class load.

Action taken: Next time this assessment is run, the lifelong learning assignment should be done in CST 415 with a focus on how students can be prepared for the rapidly changing force of network communications. The technical writing PSLO needs to be done in CST 326. In this class, students are already producing a technical report as part of the standard workload.

2. Only one direct method was used for BS and no assessment was done for AE 4 (life-long learning) in 2010-2011.

Action taken: One more direct assessment was added. Paper was assigned and assessed in CST 105 Introduction in Computer Systems III course in Spring of 2014.

Weaknesses: Students at freshman level showed expected immaturity in lifelong learning. However, this will be improved as students gain experience in program.
Action Items: These same students will be given the same assignment when they are seniors in the next assessment cycle (3 years) to assess their progress

3. No record of assessment kept for Wilsonville in last cycle. In this cycle BS#6 was assessed in Wilsonville and results included in this report in CST 415 (Michael Findley) and CST 412 (Jay Bockelman). Wilsonville will use same class, reassess and record results for closing the loop in next cycle.

4. No indirect assessment was done in 2010-2011
Action taken: an Indirect Assessment was introduced in this cycle

Result: For life-long learning outcome, the lack of an indirect assessment in 2010-2011 was noted for this cycle. Subsequently, the 2013 SET exit survey was used. When asked whether the program prepared the graduates on life-long learning, 87.1% graded themselves at proficient or higher. In addition, 27 of 29 students agree or strongly agree that the program prepared them for lifelong learning.

Strengths: The proficiency percentage and number of students agreeing are far above an 80% average. The SET faculty came to the consensus that this percentage is satisfactory.
Weaknesses: None

Action Items: None at this time

NOTE: below is an example of Appendix A of the Assessment Report which in itself is the topic of Appendix A of this Assessment Handbook

Appendix A of Assessment Report
Course Mapping Matrices

(Note: Courses shaded in red will be used to assess the respective SLOs)

In this section, each assigned outcome is mapped to courses which can be used to assess. An example of one outcome is shown below.

BS#H, AE#G - a recognition of the need for, and an ability to engage in life-long learning				
Course	**Teach**	**Eval**		
CST 102 – Introduction to Computer Systems	L	L		**E**- Extensive - a major focus of the course
CST 105 – Introduction to Computer Systems III	L	L		
CST 116 – C++ Programming I				**M**- Moderate - subject explicitly discussed in and class materials provided
CST 126 – C++ Programming II				**L**- Little explicit discussion - student may gain the skill due to activities
CST 130 – Computer Organization				
CST 131 – Computer Architecture				
CST 136 – Object Oriented Programming with C++				
CST 162 – Introduction to Digital Logic				
CST 211 – Data Structures		L		
CST 223 - Concepts of Programming Languages				
CST 229 – Grammars				
CST 236 - Software System Testing				
CST 238 – GUI Programming		M		
CST 240 – Unix				
CST 250 – Assembly Language Programming				
CST 276 - Software Design Patterns				
CST 316 – Software Process Management		E		
CST 326 – Software Design and Implementation I		E		
CST 336 – Software Design and Implementation II		E		
CST 320 – Compiler Methods				
CST 324 – Database Systems and Design		L		
CST 334 – Project Proposal				
CST 352 – Operating Systems		M		
CST 412 – Senior Development Project		E		
CST 422 – Senior Development Project		E		
CST 432- Senior Development Project		E		
CST 415 – Computer Networks		E		

AE#4 - a recognition of the need for, and an ability to engage in life-long learning				
Course	**Teach**	**Eval**		
CST 102 – Introduction to Computer Systems	L	L		**E**- Extensive - a major focus of the course
CST 105 – Introduction to Computer Systems III	L	L		

CST 116 – C++ Programming I				**M**- Moderate - subject explicitly discussed in and class materials provided
CST 126 – C++ Programming II				**L**- Little explicit discussion - student may gain the skill due to activities
CST 130 – Computer Organization				
CST 131 – Computer Architecture				
CST 136 – Object Oriented Programming with C++				
CST 162 – Introduction to Digital Logic				
CST 211 – Data Structures		L		
CST 223 - Concepts of Programming Languages				
CST 236 - Software System Testing				
CST 238 – GUI Programming		M		
CST 240 – Unix				
CST 276 - Software Design Patterns				