ABET
Self-Study Interim Report

for the

Bachelor of Science
in
Electronics Engineering Technology

at

Central Washington University

Ellensburg, Washington

June 30th, 2017

CONFIDENTIAL

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Program Self-Study Interim Report
for
ETAC of ABET Reaccreditation
Bachelor of Science in Electronics Engineering Technology
Central Washington University

BACKGROUND INFORMATION

A. Contact Information

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B. Program History

The Electronics Engineering Technology (EET) program was started in 1982 by Professor Tim Yoxtheimer, who was hired in 1976, evolving from the existing electronics courses offered in the Industrial Engineering Technology (IET) department. The Electronics Engineering Technology Major has been accredited by ABET/TAC since 1988 on the Ellensburg campus. The program added the Computer Engineering Technology Specialization and the Electronic Systems Specialization in 2001. These specializations were in place until 2012, when, by request of the CWU Academic Affairs Committee, the specializations were removed as a result of low enrollment in the Computer Engineering Technology Specialization. The program has been re-structured so that students are required to complete two of three sequences that provide depth in computer science, power systems, and/or cooperative education that complement the breadth of the program core. In western Washington, the EET program at the CWU-Pierce County center on the Pierce College Puyallup campus, started offering courses in the late 1980s and was initially accredited by ABET/TAC in 1993. The western Washington EET program was moved to the CWU-Des Moines Center in 2006 after Pierce College discontinued its EET associate degree program. Upon the retirement of the western Washington EET professor in 2016, the program was discontinued in spring of 2016 to consolidate faculty resources onto the main Ellensburg campus. Regarding recent naming changes that affect EET: In 2012, the IET department changed its name to Engineering Technologies, Safety, and Construction (ETSC). Also, as of spring 2017, the EET Industry Advisory Committee is now the Industry Advisory Board (IAB).

Summary of EET Program Events since the last general review

Since the 2015 ABET accreditation visit, the EET program has hired Greg Lyman as a tenure track assistant professor, replacing Nathan Davis who left the program immediately before the 2015 visit. Associate professor Lad Holden has stepped down as department chair of ETSC in order to focus solely on the EET program, and Jeff Wilcox has been hired as part-time lecturer. Christopher Hobbs, who had worked as lecturer from 2014-2016 also left the program.

The EET program has initiated several changes to the program in response to the ABET accreditation report received by the university on August 30th, 2016. These changes are described in detail in the following sections.

C. Options

In previous years, the EET program provided only two elective sequences with additional depth in Power Engineering and Control Systems. As part of a curriculum change submitted to the University for implementation beginning fall 2017, the EET program will offer 3 elective sequences. A detailed description of the changes made to the curriculum during the last cycle is provided in Criterion 5. Students will now be required to complete two of the three sequences offered. These are outlined in Table C-1

Power Systems Sequence		
EET 332	Generation of Electrical Power	4 credits
EET 433	Transmission and Distribution of Electrical Power	4 credits
Computer Science Sequence		
CS 111	Programming Fundamentals II	4 credits
CS 301	Data Structures	4 credits
Cooperative Education Sequence		
ETSC 490	Cooperative Education	8 credits

Table C-1: Summary of EET elective sequences

D. Program Delivery Modes

The majority of EET program courses are taught in a face-to-face format with laboratory experiences, also with some web-enabled content. CWU has chosen Canvas as the Learning Management System implemented on campus, so it is utilized as part of most EET courses. A few courses are available as web-based courses (ETSC 301 – Engineering Project Cost Analysis and ENG 301 – Technical Writing), as are many general education courses.

E. Program Locations

The Electronics Engineering Technology program is available on the main campus of Central Washington University in Ellensburg, Washington.

F. Public Disclosure

Program Educational Objectives (PEOs), Student Outcomes (SOs), annual student enrollment data, and graduation data for the EET program at CWU are posted online at:
http://www.cwu.edu/engineering/electronics-engineering-technology-program

The PEOs, SOs, and Program Criteria (PCs) are proudly displayed in the EET labs (Rooms 204 and 207) in the Hogue Technology building on the Ellensburg campus.

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

The Final Accreditation Report submitted to CWU on August 30th, 2016 by the previous ABET accreditation team outlines program weaknesses found during their visit. Several steps have been taken to correct these weaknesses as summarized in this section. Detailed discussion and data are then presented in the respective sections of this interim report.

Program Weaknesses

Criterion 2, Program Educational Objectives: "the program must demonstrate that it has a documented, systematically utilized, and effective process, involving all program constituencies, for the periodic review of program educational objectives that ensures they remain consistent with the institutional mission, the programs constituents' needs, and ABET criteria."
Corrective action taken: The program has established and implemented a systematic process to engage all program constituents in the review of the PEOs. Evidence is provided to support this engagement and assures that the PEOs are consistent with the institutional mission, constituent needs, and ABET criteria.

Criterion 3, Student Outcomes: "the program must demonstrate that it has a documented and effective process for the periodic review and revision of student outcomes."
Corrective action taken: The program has established and implemented a process for periodic review and revision of the student outcomes by all program constituents. Evidence is provided to show that the student outcomes are current and reflect the needs of program constituents.

Criterion 4, Continuous Improvement: "the program must demonstrate that: (1) it assesses student outcomes and evaluates the extent to which the student outcomes

are attained, and (2) that the results of these evaluations is systematically utilized as input for the continuous improvement of the program."
Corrective action taken: With extensive constituent feedback, the program has established and implemented a new and comprehensive assessment plan with student-learner-outcomes (SLOs) mapped to student outcomes. The assessment process includes performance targets. This self-study includes current assessment data to support continuous program evaluation. The evidence gathered from program assessment has been used to implement program improvement.

Criterion 5, Curriculum: "the program must demonstrate that it has a capstone or integrating experience for all students that develops student competencies in applying both technical and non-technical skills in solving problems."
Corrective action taken: A curricular change was made, effective fall, 2016 to require the senior capstone sequence (EET 487, 488 and 489). No student is permitted to substitute internship credits for the capstone sequence. All students now participate in an integrating experience as part of their curriculum.

Criterion 6, Faculty: "It is required that faculty serving the program have sufficient number of faculty to maintain continuity, stability, oversight, student monitoring and advising. Program faculty must engage in meaningful professional development to improve skill sets in their related field of technical expertise. The faculty must also have the responsibility and authority to improve the program through the definition and revision of program educational objectives and student outcomes as well as implementation of program of study that fosters attainment of student outcomes."
Corrective action taken: During the previous ABET review cycle and visit, the EET program coordinator, Lad Holden, was also serving as ETSC department chair. This reduced his assigned workload for the EET program. Professor Nathan Davis prepared much of the previous report, but left the university just weeks before the ABET visit, leaving the EET program understaffed. During the ABET visit, the EET program was operating on one half-time faculty member, one part-time lecturer, a technician, and a graduate teaching assistant. Since that time, Greg Lyman was hired to replace Nathan Davis, and Lad Holden has stepped down from department chair to devote full-time workload to the EET program. The program now operates with two full-time faculty members, one tenured and one tenure-track, as well as one lecturer who bring a breadth of expertise. In addition, the program and university administration has encouraged and funded engagement in professional development including attendance at conferences and symposia by program faculty.

Program Criteria, Electrical/Electronic(s) Engineering Technology: "there was no evidence that a consistent, documented process was applied to determine the level of program specific outcome attainment, and that the results of the evaluated data were used for program improvement. … The EET program must demonstrate that it satisfies all Program Criteria implied by the program title.

Corrective action taken: As part of the new comprehensive assessment plan, program-specific criteria attainment is evaluated through detailed performance indicators to ensure the attainment of discipline specific expertise utilizing both direct and indirect measures. The documented systematic process is provided in the Program Criteria section of the self-study.

GENERAL CRITERIA

CRITERION 1. STUDENTS

This Interim Report is focused on addressing the weaknesses presented to the EET program during the previous ABET evaluation cycle. No weaknesses were found for Criterion 1.

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement

CWU Mission

Central Washington University's mission is to prepare students for responsible citizenship, responsible stewardship of the earth, and enlightened and productive lives. Faculty, staff, students, and alumni serve as an intellectual resource to assist central Washington, the state, and the region in solving human and environmental problems.

CWU Vision

Central Washington University (CWU) is a dynamic, creative, and inclusive environment that promotes engaged learning and scholarship. It is distinguished regionally for the rigor of its curriculum and scholarship, for the excellence of its pedagogy, for the vibrancy of its co-curricular and residential experiences, for its commitment to providing access to higher education, and for its efforts to advance the social and economic health of the region. It is typified by an entrepreneurial spirit that establishes it as a national leader in higher education. It has a strong commitment to engaged learning and scholarship, internationalism, sustainability, inclusiveness, and life-long learning.

CWU Core Values

As a community of scholars, we are committed to:

- Each student's greatest good.
- Excellence achieved through a diversity of ideas and people.
- A rigorous curriculum and outstanding teaching.
- Intellectual inquiry, exploration, and application.
- A supportive university community.

College of Education and Professional Studies (CEPS) Mission

The mission of our college is to prepare competent, enlightened citizens who will enhance their respective professions, commit themselves to socially responsible leadership, and help develop the global economy in a spirit of cooperation. Each academic unit of the college has developed specific goals to address this mission.

University and CEPS Core Themes and Outcomes

1. TEACHING AND LEARNING
    - Maintain required and initiate new accreditation, national, state, and/or professional standards that relate to teaching and learning in all CEPS programs.
    - Provide advising that results in increased efficiency and rate of graduation.
2. INCLUSIVENESS AND DIVERSITY
    - Recognize exemplary teaching, scholarship and service.

- Recruit and retain diverse faculty.
- Recruit and retain diverse students.
- Facilitate inclusiveness throughout CEPS programs.
- Facilitate globalism throughout CEPS programs.

3. SCHOLARSHIP AND CREATIVE EXPRESSION
    - Students and faculty participation in scholarship and/or creative expression activities (e.g., SOURCE).
    - Obtain grant and private donation funding.
    - Provide and/or maintain hardware and software technologies.
4. PUBLIC SERVICE AND COMMUNITY ENGAGEMENT
    - Facilitate relationships between CEPS and PK-20 educational institutions and/or business and industry professionals.
    - Facilitate interdisciplinary relationships with other universities, colleges and departments.
    - Increase participation in university sponsored life-long learning opportunities.
5. RESOURCE DEVELOPMENT & STEWARDSHIP
    - Restore departmental office goods and services budget to 2009 levels.
    - Expand sources of revenue to support CEPS initiatives.
    - Programs will maintain or increase FTES.
    - Deliver programs at the centers that have the human resources needed to accomplish programmatic goals.
    - Students will be taught primarily by tenure and tenure track positions.
    - Facilitate and monitor mentorship program for new faculty, including TT, FTNTT, and lecturers.
    - Upgrade and/or add onto buildings and facilities.

Engineering Technologies, Safety, and Construction (ETSC) Mission

The Engineering Technologies, Safety, and Construction Department mission is to provide a quality education to undergraduate and graduate students who are preparing for professional careers. The department prepares the students for professional technical employment and insightful citizenship.

ETSC Department Goals

1. To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation in the following programs:
    - Maintain ETAC/ABET accreditation for EET and MET
    - Maintain American Council for Construction Education (ACCE) accreditation for Construction Management
    - Maintain Washington State Professional Educator Standards Board (PESB) accreditation for Technology Education
    - Obtain accreditation for Safety and Health Management from ABET/ ASAC by 2016
2. Strengthen the visibility of the department's programs.

- Develop, publish (hard copy and online) and periodically update program goals, objectives and assessment plans
- Format all program and departmental web pages consistently
- Proactive advising of campus students via major fairs, summer orientation, career fairs, and open house

3. Serve the educational needs of the place-bound students.
    - Offer appropriate alternative methods of Distance Education where appropriate, develop and maintain appropriate virtual courses
    - Each program shall develop two DE classes in five years
4. Continuously improve physical educational environment
    - Maintain and improve lab equipment and lab experiences consistent, visual aids with current industry practices
5. Continuously improve the cultural, educational, and lifelong learning environment
    - Promote student professional organizations and professional activities
    - Encourage and recognize collaborations in research and publications
    - Encourage service learning from students
    - Sponsor professional short courses and professional seminars
    - Encourage undergraduate research with faculty mentors
    - Support the recruitment of a culturally diverse student and faculty population
    - Programs incorporate diversity ideas and their assessments into courses and student activities
6. Develop a diversified funding base to support academic and student programs
    - Establish and maintain at least one foundation account for each program
    - Each program develops a budget plan for foundations funds and actively seek funding from external sources
    - Establish a software fund for any software used in ETSC courses that has a cost associated with its use
    - Establish a fund and plan for departmental hardware replacement
    - Establish endowed foundations for each program as appropriate
7. Build mutually beneficial partnerships with industry, professional groups, institutions, inter-department, inter-university, and the communities surrounding our campus locations
    - Every program served by an advisory board
    - Encourage faculty membership in professional societies
    - Identify and develop community ties
    - Supply CWU Development Officer with alumni data
8. Continuously improve support for the faculty and staff
    - Increase opportunities for service and scholarship
    - Provided resources for each faculty and staff member to attend one conference or offsite training session per year
    - Obtain necessary administrative and technical help for the department
    - Obtain student help for each program laboratory
    - Increase administrative support by one FTE

- Increase technical support by one FTE

Electronics Engineering Technology (EET) Program Mission

The Electronics Engineering Technology Program strives to ensure that graduates have the competence, skill, and expertise to develop practical designs and modifications for the implementation, operation, and production of complex systems to meet the ongoing needs of private and public industries.

B. Program Educational Objectives

The program educational objectives for the EET program state that:

1. Program graduates will be prepared for careers or educational opportunities of their choice.

2. Program graduates will be able to communicate with their desired constituencies.

3. Program graduates will be able to continue acquiring skills and expertise in their areas of interest.

4. Program graduates will be encouraged to participate in professional community organizations.

5. Program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.

The CWU EET program educational objectives can be found on the home page of the EET program website, found at:
http://www.cwu.edu/engineering/electronics-engineering-technology-program

The PEOs are also proudly displayed in the EET labs (Rooms 204 and 207) in the Hogue Technology building on the Ellensburg campus.

C. Consistency of the Program Educational Objectives with the Mission of the Institution

Table 2C-1 shows the correlation between EET program educational objectives with the related Engineering Technologies, Safety, and Construction (ETSC) Department Goals, College of Education and Professional Studies (CEPS) Outcomes, and the core values of the University. In addition, the PEOs clearly reflect CWU's mission and vision through its focus on activity-based learning, life-long learning, technology enhanced instructional methods, and professional ethics.

Central Washington University Electronics Engineering Technology Program Educational Objectives			
Objectives	**Related Department Goals**	**Related College Themes and Outcomes**	**Related University Core Values**
1. CWU EET program graduates will be prepared for careers or educational opportunities of their choice.	Goal 1 - Nurture excellent programs in Engineering Technology	Core Theme 1 - Teaching and Learning	Each student's greatest good
2. CWU EET program graduates will be able to communicate with their desired constituencies.	Goal 1 - Nurture excellent programs in Engineering Technology	Core Theme 1 - Teaching and Learning	Excellence achieved through a diversity of ideas and people
3. CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.	Goal 1 - Nurture excellent programs in Engineering Technology	Core Theme 1 - Teaching and Learning	Intellectual inquiry, exploration, and application
4. CWU EET program graduates will be encouraged to participate in professional community organizations.	Goal 1 - Nurture excellent programs in Engineering Technology	Core Theme 1 - Teaching and Learning	A supportive univeristy community
5. CWU EET program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.	Goal 1 - Nurture excellent programs in Engineering Technology	Core Theme 1 - Teaching and Learning	A rigorous curriculum and outstanding teaching

Table 2C-1: Correlation between CWU EET PEOs, ETSC Mission, CEPS mission and CWU Mission

D. Program Constituencies

The EET program serves its constituencies by preparing graduates for technical careers and educational opportunities, communicating with and soliciting feedback from industry and the program's industrial advisory board, and working with administration and fellow faculty to build a collegial environment. Therefore, the program constituents include:

- Recent graduates of the program
- Employers who hire from the program
- Members of the Industry Advisory Board (IAB)

- Program Faculty and Staff
- CWU Administration

E. Process for Review of the Program Educational Objectives

The continuous improvement process for the EET program requires that the Industry Advisory Board review the program educational objectives on a yearly periodic cycle. Upon review, the IAB will make recommendations or request additional documentation if a concern is expressed.

The extent to which the various stakeholders participate in PEO review is varied. Enrolled students are surveyed regarding the PEOs during a senior exit survey. Faculty members are constantly addressing aspects of program objectives. The IAB, which is generally made up of alumni but also represents interests of industry and related companies, provide their feedback during biannual meetings. CWU administration has its own program oversight protocol and directly comments on all related program procedures, objectives and outcomes. Email communication is utilized for administration to review and provide feedback on EET PEOs.

The current PEOs were reviewed and approved by the Program Faculty and the Industry Advisory Board during the November 18, 2016 meeting. A recommendation for a slight wording change was made to PEO 4, and approved by the board.

Figure 2E-1 shows the section of the meeting minutes that pertained to the review and approval of EET PEOs by the IAB.

i. Review of Program Educational Objectives
    1. Suggestion by IAC (Kissner) to change wording of PEO 4
        a. Proposed new wording for PEO 4: "CWU EET program graduates will be encouraged to participate in professional community organizations"
            i. Motion to approve PEOs:
                1. Moved by Kissner, seconded by Goes
                    a. Unanimous board approval

Figure 2E-1: PEO review by CWU EET IAB

Figure 2E-2 shows the senior exit survey question were students provide their review and feedback on EET PEOs.

Program Educational Objectives	1	2	3	4
For the 5 educational objectives listed below please indicate your perception of their value.	Is Not Valuable In Any Way	Is Not Valuable	Is Valuable	Is Very Valuable
1. CWU EET program graduates will be prepared for careers or educational opportunities of their choice.	☠	☹	😐	☺
2. CWU EET program graduates will be able to communicate with their desired constituencies.	☠	☹	😐	☺
3. CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.	☠	☹	😐	☺
4. CWU EET program graduates will be encouraged to participate in professional community organizations.	☠	☹	😐	☺
5. CWU EET program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.	☠	☹	😐	☺

Figure 2E-2: PEO review by EET students

Figure 2E-3 shows the email sent to CWU administration for their review and feedback of EET PEOs.

Hi all,

As constituents of the EET program, and as part of our periodic review of Program Educational Objectives (PEOs), if you would like to provide some feedback regarding the PEOs listed below, please feel free to do so.

EET Program Educational Objectives

1. Program graduates will be prepared for careers or educational opportunities of their choice.
2. Program graduates will be able to communicate with their desired constituencies.
3. Program graduates will be able to continue acquiring skills and expertise in their areas of interest.
4. Program graduates will be encouraged to participate in professional community organizations.
5. Program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.

Theses PEOs were reviewed and approved by the EET Industry Advisory Board at this year's Fall meeting (Nov 18th, 2016).

Please let me know if you have any questions/concerns. Thanks for your input!

-Greg

Figure 2E-3: PEO review by CWU Administration

CRITERION 3. STUDENT OUTCOMES

A. Process for the Establishment and Revision of the Student Outcomes

The establishment and revision of CWU EET student outcomes (SOs) is a continual process. The program's current SOs have been developed by the faculty with guidance from the stated missions, goals, objectives, and outcomes of the university, college, department, EET IAB, ABET accreditation requirements, alumni and employer feedback.

The EET student outcomes are reviewed annually by constituencies of the program including the IAB, faculty and alumni. Students also provide feedback and suggestions in the senior survey. Following change recommendations, the process to update the EET SOs are the responsibility of the program coordinator and/or designated faculty members.

B. Student Outcomes

Through the coursework completed, the graduates of the CWU EET program attain the following eleven student outcomes prior to graduation:

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 nontechnical 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.

The CWU EET student outcomes can be found on the home page of the EET website, found at:
http://www.cwu.edu/engineering/electronics-engineering-technology-program

The Student Outcomes are also proudly displayed in the EET labs (Rooms 204 and 207) in the Hogue Technology building on the Ellensburg campus.

Based on program review and faculty discussions, Table 3B-1 shows the student outcome to course mapping.

CWU EET Student Outcomes-to-Course Cross Reference												
Student Outcome	**Course**											
	EET 312	EET 323	EET325	EET 343	EET 372	EET 374	EET 376	EET 426	EET 452	EET 487	EET 488	EET 489
3.a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.	x											
3.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								
3.c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.				x								
3.d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives.											x	
3.e. an ability to function effectively as a member or leader on a technical team.					x							
3.f. an ability to identify, analyze, and solve broadly-defined engineering technology problems.											x	
3.g. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature.												x
3.h. an understanding of the need for and an ability to engage in self-directed continuing professional development.												x
3.i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity.										x		
3.j. a knowledge of the impact of engineering technology solutions in a societal and global context.										x		
3.k. a commitment to quality, timeliness, and continuous improvement.											x	

Table 3B-1: Mapping of Student Outcomes to EET Course where assessment occurs

C. Mapping of Student Outcomes to Criterion 3 Learned Capabilities & Program Criteria Outcomes

***Please note that Program Specific Criteria descriptions and periodic review are covered in detail in the Program Criteria section.

Through periodic review of PEOs, Student Outcomes and Program Criteria, the CWU EET program constituents continually update and improve upon each outcome and criteria in order to properly educate the next generation of electronics engineers. The skills developed within the program also encompass the ABET student outcomes in engineering technology. The mapping in Table 3C-1 provides a complete picture of how the knowledge and skills (Program Criteria) which the EET students possess at graduation map to the student 3.a-3.k learning outcomes for the EET program.

CWU EET Program Criteria-to-Student Outcomes Cross Reference											
Program Criteria	**Corresponding Student Outcome**										
	3.a	**3.b**	**3.c**	**3.d**	**3.e**	**3.f**	**3.g**	**3.h**	**3.i**	**3.j**	**3.k**
C.a.1. Application of circuit analysis to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x									
C.a.2. Application of circuit design to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x									
C.a.3. Application of computer programming to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x									
C.a.4. Application of associated software to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x					x				
C.a.5. Application of analog electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x									
C.a.6. Application of digital electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x			x						
C.a.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical / electronic circuits.	x	x									
C.a.8. Application of industry codes, regulations, and engineering standards to the building, testing, operation, and maintenance of electrical / electronic circuits.	x						x		x	x	
C.b. Application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical /electronic systems.	x	x						x			x
C.c.1. The ability to analyze, design, and implement instrumentation systems.	x	x	x	x		x					
C.c.2. The ability to analyze, design, and implement computer systems.	x	x	x	x		x					
C.d. The ability to apply project management techniques to electrical /electronic(s) systems.	x		x		x		x		x		x
C.e. The ability to utilize transform methods and differential and integral calculus to characterize electrical/ electronic systems.	x	x								x	

Table 3C-1: Mapping of CWU EET Program Specific Criteria to Student Outcomes

D. Relationship of Student Outcomes to Program Educational Objectives

The 11 EET student outcomes, as described in the preceding sections, are developed and periodically reviewed to support the EET program educational objectives. The student outcomes describe the skill sets that graduating EET students must obtain during their studies.

Table 3D-1 details how the Student Outcomes developed prior to graduation from the EET program prepare students to attain the program's educational objectives.

CWU EET PEOs-to-SOs Cross Reference											
Program Educational Objective	**Corresponding Student Outcome**										
	3.a	**3.b**	**3.c**	**3.d**	**3.e**	**3.f**	**3.g**	**3.h**	**3.i**	**3.j**	**3.k**
1. CWU EET program graduates will be prepared for careers or educational opportunities of their choice.	x	x	x	x	x	x	x	x	x	x	x
2. CWU EET program graduates will be able to communicate with their desired constituencies.	x				x		x	x	x	x	x
3. CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.	x	x	x	x		x		x			x
4. CWU EET program graduates will be encouraged to participate in professional community organizations.					x		x	x	x	x	x
5. CWU EET program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.	x	x	x	x		x		x			x

Table 3D-1: Mapping of Program Educational Objectives to Student Outcomes

CRITERION 4. CONTINUOUS IMPROVEMENT

The faculty of the Electronics Engineering Technology program at CWU, under the direction of the ETSC department chair, are responsible for implementing changes in response to the continuous improvement plan. The CWU EET program constituents, as outlined in Criterion 2, Section D, include recent graduates, employers who hire from the program, members of the Industrial Advisory Board, as well as faculty and administration of the University. Each of these groups can provide recommendations for improvement, which are evaluated by the EET coordinator and EET program faculty to determine its impact and feasibility. The various continuous improvement cycles and feedback loops can be visualized in Figure 4-1.

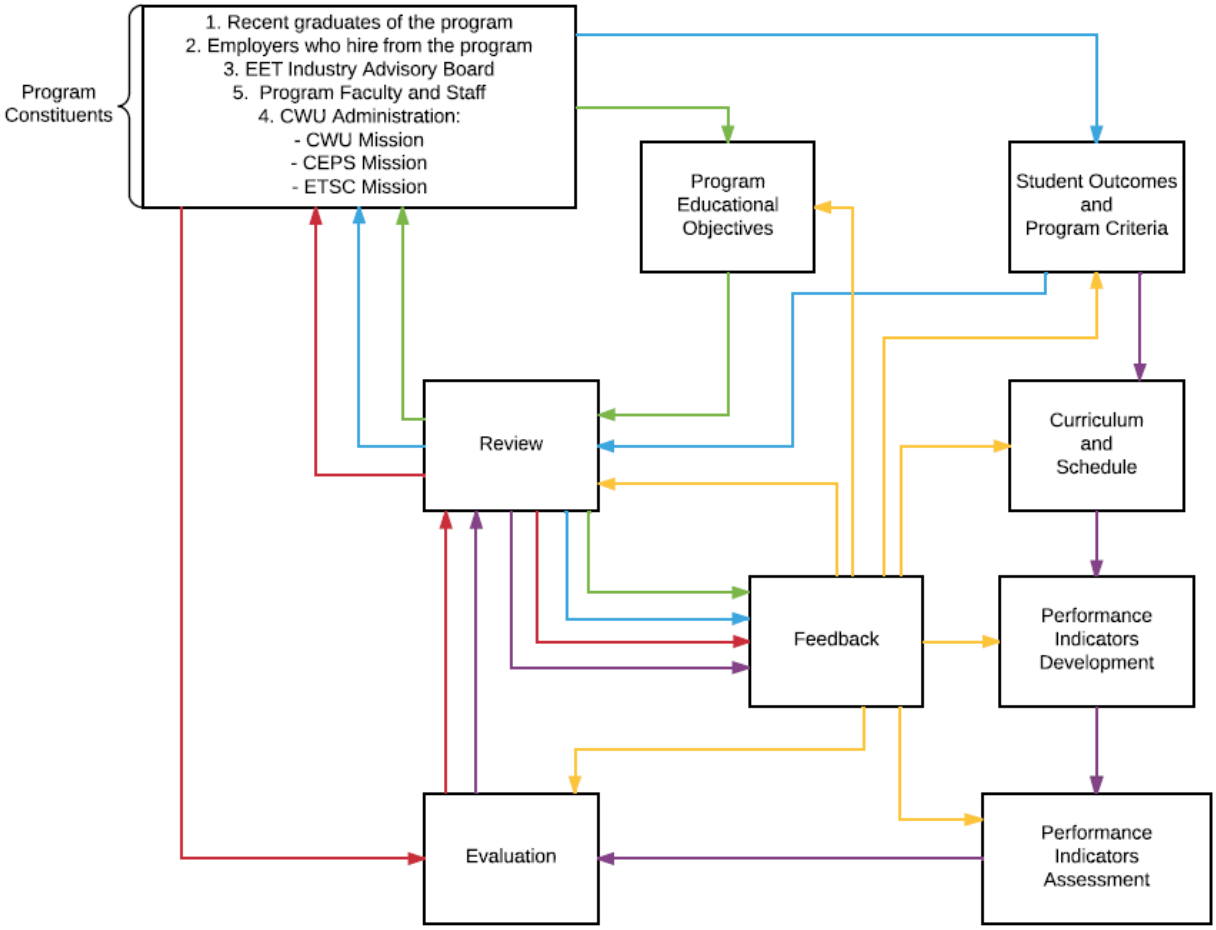

Figure 4-1: Continuous Quality Improvement (CQI) for the CWU EET Program

As part of the continuous improvement process, the program has been through several program changes in recent years. The details of these program changes will be available in a binder during the campus visit.

A. Student Outcomes

The attainment of student outcomes is evaluated within the core courses of the EET program. Each course is aligned with one or more of the student outcomes as mapped in Table 3B-1. A combination of direct and indirect assessment methods is utilized in the process of continuous improvement for the program. A new assessment plan that is systematic and well-documented has been created to address previous weaknesses. A thorough review of this continuous improvement process is discussed in Section B: Continuous Improvement. Based off the template provided for this report, and the course mapping shown in Table 3B-1, the student outcomes and the associated assessment methods are outlined as follows:

Student Outcome 3.a

1. Description of assessment processes: This outcome is currently assessed via direct measure in Basic Electronics (EET 312), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to construct and analyze a Field-Effect Transistor (FET). The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Basic Electronics (EET 312) is offered every other year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.a
    - Direct data: In previous years, this outcome was directly assessed in EET 221, EET 323 and EET 324 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.27 to 3.53. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated, as the course was not offered. It will be offered next winter quarter, and the assessment process will occur at that time and into future years.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 2.7/4 = 67.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of teaching for the outcome: 2.4/4 = 60%

        - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
    - Rating of laboratory equipment for the outcome: 3.3/4 = 82.5%
        - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.b

1. Description of assessment processes: This outcome is currently assessed via direct measure in Process Control (EET 343), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to model and analyze a proportional-integral (PI) controller. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Process Control (EET 343) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.b
    - Direct data: In previous years, this outcome was directly assessed in EET 221, EET 324 and EET 343 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.51 to 3.49. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 86% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.3/4 = 82.5%
            - Level of attainment met.
        - Rating of teaching for the outcome: 2.7/4 = 67.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the outcome: 3.1/4 = 77.5%

        - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.c

1. Description of assessment processes: This outcome is currently assessed via direct measure in Process Control (EET 343), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to model and analyze a proportional-integral-derivative (PID) controller. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Process Control (EET 343) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 85% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.c
    - Direct data: In previous years, this outcome was directly assessed in EET 312, EET 376 and EET 323 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.69 to 3.03. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 86% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.0/4 = 75%
            - Level of attainment met.
        - Rating of teaching for the outcome: 2.8/4 = 70%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the outcome: 2.9/4 = 72.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for

assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.d

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Project Quality Lab (EET 488LAB), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to prototype a technical project. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Quality Lab (EET 488LAB) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.d
    - Direct data: In previous years, this outcome was directly assessed in EET 323, EET 370 and EET 372 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.1 to 3.58. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 100% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis that 100% of students met the outcome, the program faculty is re-visiting the designated performance target of the performance indicators, as the target may need to be revised.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.4/4 = 85%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.e

1. Description of assessment processes: This outcome is currently assessed via direct measure in Advanced Digital Circuits (EET 372), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to work on a team. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Advanced Digital Circuits (EET 372) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.e
    - Direct data: In previous years, this outcome was directly assessed in EET 372 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.29 to 3.0. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 100% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis that 100% of students met the outcome, the program faculty is re-visiting the designated performance target of the performance indicators, as the target may need to be revised.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 2.9/4 = 72.5%
            - Level of attainment not met. As a result, a new rubric has been developed to assess team projects.
        - Rating of teaching for the outcome: 2.9/4 = 72.5%
            - Level of attainment not met. As a result, a new rubric has been developed to assess team projects.
        - Rating of laboratory equipment for the outcome: 3.1/4 = 77.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.f

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Project Quality Lab (EET 488LAB), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to analyze and test a project prototype. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Quality Lab (EET 488LAB) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.f
    - Direct data: In previous years, this outcome was directly assessed in EET 370, EET 323, EET 324 and EET 375 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.68 to 3.18. As part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 100% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis that 100% of students met the outcome, the program faculty is re-visiting the designated performance target of the performance indicators, as the target may need to be revised.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.4/4 = 85%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.g

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Technical Presentations (EET 489), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to make a presentation that communicates the value of the project, the design prototyping and testing processes. The indirect measure involves questions on the senior exit survey that query the student's

perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.

2. Frequency with which assessment processes are carried out: Senior Technical Presentations (EET 489) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.g
    - Direct data: In previous years, this outcome was directly assessed in EET 323, EET 376, EET 478, EET 479 and EET 489 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.25 to 3.0. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 92% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.4/4 = 85%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.4/4 = 85%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.h

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Technical Presentations (EET 489), and via indirect measure in the EET senior exit survey. The direct measure involves instructor analysis of supplementary student project documentation where students develop parts lists, schematics, program code, and operation and maintenance procedures as applicable for their project. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.

2. Frequency with which assessment processes are carried out: Senior Technical Presentations (EET 489) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.h
    - Direct data: In previous years, this outcome was directly assessed in EET 478, EET 479 and EET 489 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.40 to 3.20. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 85% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.4/4 = 85%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.3/4 = 82.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.i

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Project Management (EET 487), and via indirect measure in the EET senior exit survey. The direct measure involves instructor assessment of student presentations and papers on professional and ethical responsibilities, one of which addressing diversity. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Management (EET 487) is offered every year during fall quarter, so the direct

measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.

3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.i
    - Direct data: In previous years, this outcome was directly assessed in IET 301, EET 478, EET 479 and EET 489 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.38 to 2.95. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. As part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 100% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis that 100% of students met the outcome, the program faculty is re-visiting the designated performance target of the performance indicators, as the target may need to be revised.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.6/4 = 90%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.j

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Project Management Lab (EET 487LAB), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of student presentations where they can demonstrate a knowledge of the impact engineering technology solutions have on societies and the planet. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Management Lab (EET 487LAB) is offered every year during fall quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment,

an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.

4. Summaries of results for Student Outcome 3.j
    - Direct data: In previous years, this outcome was directly assessed in EET 221, and EET 478 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.50 to 3.16. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated. The development of these measures happened after the course occurred, so data will begin collection in fall quarter 2017 and continue into future years.
    - Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the outcome: 3.4/4 = 85%
            - Level of attainment met.
        - Rating of teaching for the outcome: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of laboratory equipment for the outcome: 3.3/4 = 82.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

Student Outcome 3.k

1. Description of assessment processes: This outcome is currently assessed via direct measure in Senior Project Quality (EET 488), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the students' ability to determine and analyze manufacturing process capabilities and implement improvements. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Quality (EET 488) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure 4B-3 for an example of a survey question.
4. Summaries of results for Student Outcome 3.k
    - Direct data: In previous years, this outcome was directly assessed in IET 380, and EET 324 with assessment occurring on a 4-point scale and no

stated threshold for attainment. The average scores ranged from 2.84 to 3.42. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated. The development of these measures happened after the course occurred, so data will begin collection in winter quarter 2017 and continue into future years.

- Indirect data: This outcome was indirectly assessed in the recent senior exit survey, with the following results
    - Students perceived achievement of the outcome: 3.4/4 = 85%
        - Level of attainment met.
    - Rating of teaching for the outcome: 3.3/4 = 82.5%
        - Level of attainment met.
    - Rating of laboratory equipment for the outcome: 3.4/4 = 85%
        - Level of attainment met.

5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes. They will be available in the display room during the team visit.

B. Continuous Improvement

In response to the ABET accreditation report received in August 2016, and with thorough analysis of the program by current faculty and input from the IAB, it was deemed that the assessment processes utilized in previous years as related to the continuous improvement of the program could be improved and strengthened. Thus, major changes to the continuous improvement process have been in development throughout the 2016-2017 academic year, with full implementation beginning fall 2017:

- The previous 4-point scale for student outcome assessment was changed to a percentage scale, with a defined threshold for attainment of the outcome. Figure 4B-1 shows an example of the previous 4-point scale of outcome assessment. Figure 4B-2 shows an example of the new percentage scale of outcome assessment.

3.a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines	EET 221	Beginning	1.29	2.03	2.54	2.88	2.61	2.53	2.31
	EET 312	Developing	ND	2.00	3.38	ND	ND	2.94	2.69
	EET 323	Accomplished	2.88	3.78	ND	3.41	ND	ND	3.36
	EET 324	Accomplished	3.33	ND	4.00	ND	3.25	ND	3.53

Figure 4B-1: Previous student outcome assessment method (4-point scale)

3.c.an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes	85%	Does Not Meet Any Expectation	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
Spring 2016					
Spring 2017	86%	14%		14%	71%
Spring 2018					
Spring 2019					
Spring 2020					
Spring 2021					

Figure 4B-2: Current student outcome assessment method (percentage)

- Thresholds to assess level of attainment were assigned to each student outcome. As an example, in Figure 4B-2 the expected level of attainment for SO 3.f is 80% of students will meet or exceed expectations.
- A new senior exit survey was developed by program faculty to assist in the indirect measure of assessment for student outcomes. Figure 4B-3 shows an example of the outcomes based survey.

Student Outcome - 3.c. EET 343	1	2	3	4
3.c. The student will be able to demonstrate an ability to model and analyze a proportional integral derivative (PID) controller.	Does Not Meet Any Expectation	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
Rate your percieved achivement of this outcome.	☠	☹	😐	☺
comments:				
Rate the teaching of this outcome.	☠	☹	😐	☺
comments:				
Rate the Laboratory Equipment, Computers, and Software utilized in your learning experience of this outcome.	☠	☹	😐	☺
comments:				

Figure 4B-3: Example of senior exit survey question regarding SO 3.f

- Leaner Outcomes revised to meet university requirements were mapped to ABET student outcomes. Table 3B-1 shows the mapping of student outcomes to EET core courses.
- During the 2016-2017 academic year, the CWU EET Industry Advisory Board met twice, once in fall and once in spring. These meetings were several hours long as discussions and approvals of assessment changes occurred.
    - Figure 4B-4 shows a snippet from the fall meeting notes where the IAB reviewed and approved the change to the percentage method.

iii. Review of rubric structure used in program assessment
    1. EET faculty requests to move from a 0-4 point scale to a percentage scale
        a. Motion to adopt percentage methodology
            i. Moved by Kissner, seconded by Springer
                1. Unanimous board approval
        b. Motion to adopt 4-column evaluation structure: Meets l Expectations, Meets some Expectations, Meets Expectations, and Exceeds Expectations.
            i. Moved by Bremer, seconded by Springer
                1. Unanimous board approval

Figure 4B-4: IAB review and approval of new assessment method

- Figure 4B-5 shows a snippet from the spring meeting notes where it was determined that the old assessment data should not be ported to the new assessment structure.

V. Review of old ABET assessment structure versus new assessment structure
    a. Did not have appropriate threshold in old system
    b. Board was presented with old data forms.
        i. Board suggested to perform clean cut with data analysis and move to new system. Do not port over old data to new system.
        ii. Board did not want to assign threshold to old data
            1. **Motion to approve these decisions: Moved by Springer, seconded by Goes**

Figure 4B-5: IAB review and approval regarding assessment data

- The complete IAB meeting notes are included in Appendix A.
- The thresholds to determine expected levels of attainment for student outcomes were also reviewed during the IAB meetings.
- The schedule for assessment and evaluation of student outcomes by the Industry Advisory Board (IAB) is shown in Table 4B-2. Documentation of review of all student outcomes (3.a through 3.k) will be available in the display room during the campus visit.
- A summary of action items regarding the continuous improvement process is included in Table 4B-1.

Action Item	Reason	Date Initiated	Results
Remove ETSC 490 as substitution of capstone sequence	Previous ABET report	Fall 2016	All EET majors are now required to take capstone sequence
Level of attainment developed for SOs	Previous ABET report	Fall 2016	In assessment process. See Criterion 4A.
Level of attainment developed for Program Criteria	Previous ABET report	Fall 2016	In assessment process. See Criterion "Program Criteria section B."
Change from 4-point scale to percentage scale	Faculty assessment and IAB review	Fall 2016	In assessment process. See Figure 4B-2.
Revised mapping of SOs to EET core courses	Continuous improvement	Fall 2016	Table 3B-1
Revised mapping of Program Criteria to EET core courses	Continuous improvement	Fall 2016	Table 3C-1
Revised all EET course "CWU learner outcomes" and mapped to ABET general and program criteria	CWU curriculum committee and program change	Fall 2016	Data in binders for site visit
Assign performance indicators to student outcomes and program criteria	Continuous improvement	Fall 2016	Data in binders for site visit
Removal of Mr. Hobbs from program	Continuous improvement and student feedback	Fall 2016	Program improvement
Present all changes to IAB	Continuous improvement	Fall 2016	Program improvement
Hiring of Mr. Wilcox as lecturer	Continuous improvement	Fall 2015	Experience added to program
Addition of "Robotics and Automation" three-course sequence	Program assessment	Fall 2017	New course offering for student recruitment

Table 4B-1: Summary of continuous improvement since previous ABET cycle

CWU EET Program
Schedule for Assessment and Evaluation of Student Outcomes
Fall IAB Meetings

ABET Student Outcomes	11-12	12-13	13-14	14-15	15-16	16-17
3.a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities	■			■		
3.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		■			■	
3.c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes			■			■
3.d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives	■			■		
3.e. an ability to function effectively as a member or leader on a technical team		■			■	
3.f. an ability to identify, analyze, and solve broadly-defined engineering technology problems			■			■
3.g. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature	■			■		
3.h. an understanding of the need for and an ability to engage in self-directed continuing professional development		■			■	
3.i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity			■			■
3.j. a knowledge of the impact of engineering technology solutions in a societal and global context				■		
3.k. a commitment to quality, timeliness, and continuous improvement					■	

Table 4B-2: Schedule for Assessment and Evaluation of Student Outcomes

C. Additional Information

Direct data for assessment of student outcome attainment is continually being gathered, thus more data will be presented at or before the campus visit. Copies of the materials referenced in sections 4.A. and 4.B will also be available for review at the time of the ABET team visit. All program change documents and IAB meeting notes will also be provided.

Specific program criteria assessment is covered in the Program Criteria section.

CRITERION 5. CURRICULUM

A. Program Curriculum

1. Table 5A-1 beginning on page 44 shows the current curriculum for students in the CWU EET program. CWU currently operates on a quarter system.

2. *Describe how the curriculum aligns with the program educational objectives.*

   As presented in Criterion 2, the CWU EET program constituents have developed the following five Program Educational Objectives (PEOs):

   1. Program graduates will be prepared for careers or educational opportunities of their choice.
   2. Program graduates will be able to communicate with their desired constituencies.
   3. Program graduates will be able to continue acquiring skills and expertise in their areas of interest.
   4. Program graduates will be encouraged to participate in professional community organizations.
   5. Program graduates will be able to use information from a variety of media and constituencies to develop practical methods and procedures to solve professional challenges.

   Table 5A-2 shows the mapping of both required and elective courses within the CWU EET curriculum to the Program Educational Objectives.

CWU EET Courses-to-PEO Cross Reference					
Course	Corresponding PEO				
	1	2	3	4	5
CS 110 – Programming Fundamentals I	x				x
EET 221 – Basic Electricity	x				x
EET 221LAB – Basic Electricity Lab	x				x
EET 271 – Digital Circuits	x				x
EET 312 – Basic Electronics	x				x
EET 323 – Active Linear Circuits	x				x
EET 325 – Electrical Networks	x				x
EET 343 – Process Control	x				x
EET 372 – Advanced Digital Circuits	x	x			x
EET 373 – Introduction to Embedded Programming	x				x
EET 374 – Microprocessors	x				x
EET 376 – Advanced Microprocessors	x				x
EET 426 – Advanced Electrical Networks	x				x
EET 452 – Computer Networks	x				x
ETSC 241 – Programmable Logic Controllers	x				x
ETSC 242 - Instrumentation	x				x
ETSC 301 – Engineering Project Cost Analysis	x	x			x
EET 332 – Generation of Electrical Power	x				x
EET 433 – Transmission of Electrical Power	x				x
ETSC 490 – Cooperative Education	x	x	x	x	x
CS 111 – Programming Fundamentals II	x				x
CS 301 – Data Structures	x				x
Math 172 – Calculus I	x				x
Math 173 – Calculus II	x				x
MATH 260 – Sets and Logic	x				x
MATH 272 – Multivariable Calculus I	x				x
MATH 311 – Statistical Concepts and Methods	x				x
MATH 330 – Discrete Mathematics	x				x
MATH 376 – Differential Equations I	x				x
PHYS 111 – Introductory Physics I and Lab	x				x
PHYS 112 – Introductory Physics II and Lab	x				x
PHYS 113 – Introductory Physics III and Lab	x				x
PHYS 181 – General Physics I and Lab	x				x
PHYS 182 – General Physics II and Lab	x				x
PHYS 183 – General Physics III and Lab	x				x
ETSC 389 – Technical Presentations	x	x		x	x
COM 207 – Introduction to Communication Studies	x	x		x	x
COM 345 – Business and Professional Speaking	x	x		x	x
ADMG 385 – Business Communications and Report Writing	x	x		x	x
CS 325 – Technical Writing in Computer Science	x	x		x	x
ENG 310 – Technical Writing	x	x		x	x
EET 487 – Senior Project Management	x	x	x	x	x
EET 487LAB – Senior Project Management Lab	x	x	x	x	x
EET 488 – Senior Project Quality	x	x	x	x	x
EET 488LAB – Senior Project Quality Lab	x	x	x	x	x
EET 489 – Senior Technical Presentations	x	x	x	x	x

Table 5A-2: CWU EET required and elective course mapping to PEOs

3. *Describe how the curriculum and its associated prerequisite structure support the attainment of the student outcomes.*

   The student outcomes (SOs) for the CWU EET program are assessed in core courses. This mapping of student outcomes to courses is shown in Table 3B-1 in Criterion 3. The courses that are assigned with assessing specific student outcomes have the outcomes detailed on the course syllabus, thus ensuring that any instructor assigned to the course can assess the outcome. The pre-requisite structure, as described in the next section, assists the students in developing the knowledge and skills in an order that helps them to succeed in the program.

4. *Attach a flowchart or worksheet that illustrates the prerequisite structure of the program's required courses.*

   Figure 5A-3 shows the prerequisite structure for the CWU EET Program. The EET upper level technical coursework makes extensive usage of lower level courses as prerequisites. Although the senior capstone sequence does not have any assigned prerequisites, the students are not permitted to take the sequence until their senior year.

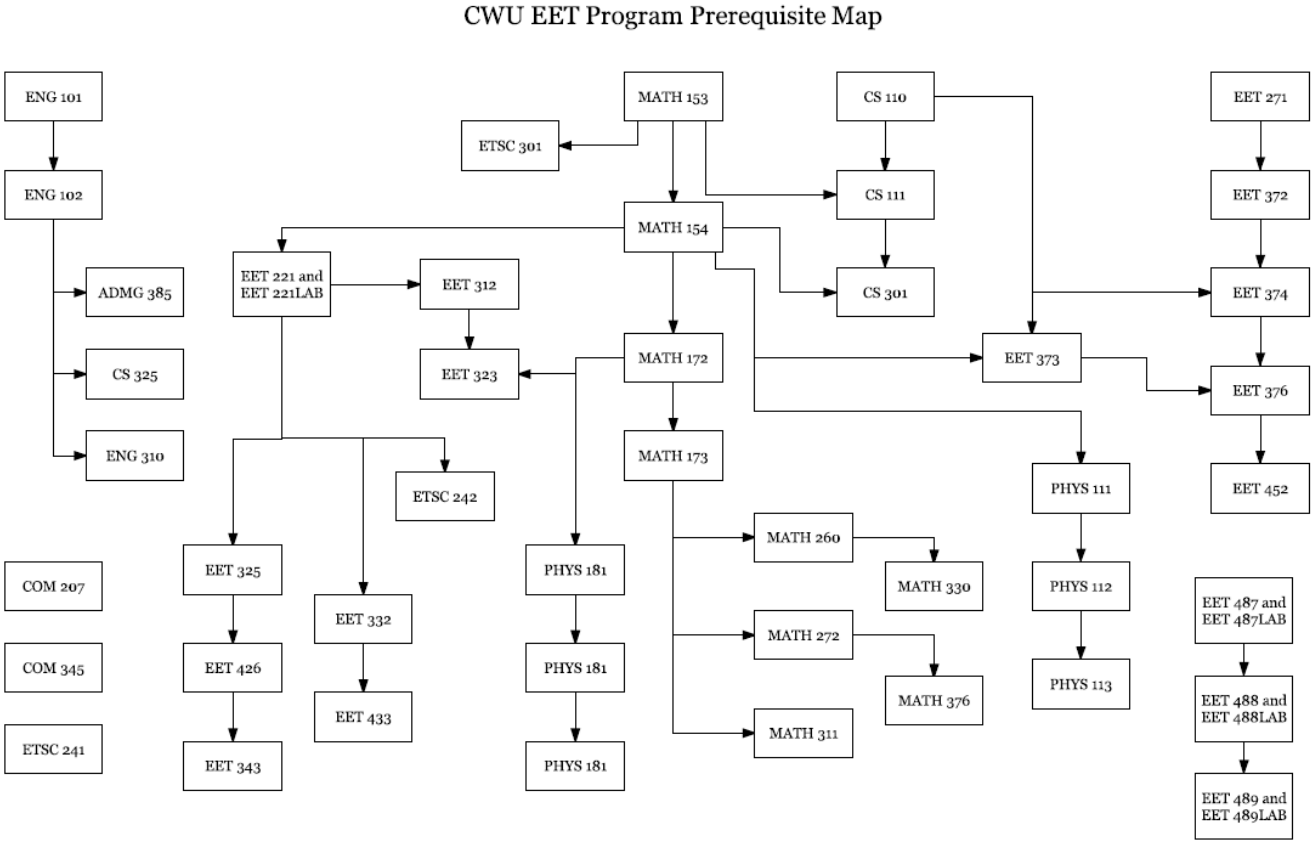

Figure 5A-3: Pre-requisite mapping of required and elective courses in the EET Program

5. *For each curricular area specifically addressed by either the general criteria or the program criteria as shown in Table 5A-1, describe how your program meets the specific requirements for this program area in terms of hours and depth of study.*

   The CWU EET program was developed to educate the next generation of electronics engineers who are prepared for entry into the technical workplace and/or those who seek advanced education. Through coursework and projects, the program graduates have an understanding of the need for continual learning, be it at the graduate level or through advanced concept training while employed. The skills learned in the EET program reflect the skill sets needed within the regional and national industries in which our students gain employment as well as the needs of the students in graduate programs. In addition, the program faculty are keenly aware of the overriding ABET criteria, both programmatic and general. All of the curricular work completed by the faculty fit within the ABET programmatic and general guidelines for Electrical/Electronic(s) Engineering Technology programs. The following sections will present how the CWU EET program fulfills and/or exceeds these requirements.

   - Mathematics – The program must develop the ability of students to apply mathematics to the solution of technical problems. The CWU EET curriculum includes integral and differential calculus as well as other mathematics above the level of algebra and trigonometry. These mathematics requirements are appropriate to the student outcomes and program educational objectives as evident in Table 5A-2 and Table 3B-1
   - Technical Content
     - The EET core courses represent 80 credit hours of technical content related to Electrical/Electronic(s) topics. This amount of credit hours represents more than 1/3 of the total credit hours for the program but does not exceed the 2/3 requirement as set forth by ABET General Criterion 5 in the Technical Content section.
     - The EET core courses prepare students for the increasingly complex technical specialties they encounter later on in the curriculum. In referencing Figure 5A-3, the prerequisite mapping shows that most upper level EET courses have a solid foundation of prerequisites in order to prepare students for increasing difficulty in content.
     - The CWU EET program strongly supports the "hands-on" educational approach. Students graduating from the program have extensive experience with the tools utilized in the Electrical/Electronic(s) disciplines.
   - Physical and Natural Sciences – All EET students are required to take a Physics sequence as part of the requirements for graduation. There are two options for the students to complete this requirement: through an algebra-based sequence (PHYS 111, 112, and 113) or calculus-based sequence (PHYS 181, 182, and 183). Each Physics sequence include a laboratory component.

6. *If your program has a capstone or other culminating experience for students specifically addressed by either the general or program criteria, describe how this experience helps students attain the student outcomes.*

   Based on both ABET general criteria for engineering technology programs as well as program criteria for Electrical/Electronic(s) technology programs:

   > *Baccalaureate degree programs must provide a capstone or integrating experience that develops student competencies in applying both technical and non-technical skills in solving problems.*

   The CWU EET curriculum requires students to complete a year-long capstone sequence during the senior year of their undergraduate career.

   EET 487 – Senior Project Management
   EET 487LAB – Senior Project Management Lab
   EET 488 – Senior Project Quality
   EET 488LAB – Senior Project Quality Lab
   EET 489 – Senior Technical Presentations

   In this sequence, the EET students work individually on open-ended capstone projects. In rare-circumstances, if a project is deemed difficult enough to require more than one student, then two students may be assigned to one project. A two-student project is only approved if evidence can be gathered to ensure that all students receive the complete integrative experience. Students are provided with a range of ideas and platforms available for which to base their project or are welcome to present their own ideas. Once project topics are approved by the instructor, the scope of each project is refined in order to fit within the time requirements. During the fall quarter (EET 487), project management techniques are studied and applied to each of the senior projects. Then in the winter quarter, Quality Control topics are discussed and applied to the projects. In the spring quarter, students are required to present their completed projects at the University wide undergraduate research symposium (SOURCE). The students also write a comprehensive project paper as the final submittal for the senior capstone sequence.

7. *If your program allows cooperative education to satisfy curricular requirements specifically addressed by either the general or program criteria, describe the academic component of this experience and how it is evaluated by the faculty.*

   The CWU EET program allows and encourages students to utilize an internship experience within their degree plan. Students are given the option of using an internship experience to fulfill an elective sequence. The University provides a framework for assignment of credit hours to work hours of an internship through a "Cooperative Learning Agreement". A student may enroll in a maximum of 12 credits through the internship agreement. However, based on the EET elective

sequences as described in Table C-1, a total of 8 credits can be applied to the EET curriculum requirements. Students who enroll in cooperative learning agreements must comply with the requirements for completion as set forth by the faculty member assigned to the agreement. The faculty member may require a term paper, periodic progress reports, assigned reading, journal entries, or other requirements as deemed appropriate. These documents, as well as examples learning agreement forms will be provided to the visiting ABET team.

In response to the previous ABET accreditation report, the CWU EET program has removed the option for students to substitute cooperative education credits in place of the senior capstone sequence. This change was put into effect fall quarter 2016, once the ABET report was received.

8. *Describe by example how the evaluation team will be able to relate the display materials, i.e. course syllabi, textbooks, sample student work, etc., to each student outcome. (See the 2017-2018 APPM Section I.E.5.b.(2) regarding display materials.)*

   The visiting team will be given both assessment and course materials so they will be able to determine the modes in which the CWU EET program is utilizing and supporting the Program Educational Objectives, Student Outcomes, and Program Criteria in each course and in the overall program. The team will have access to student work examples, senior project reports, internship agreements, and course textbooks. They will also have access to review IAB meeting minutes, recent program changes, and documents that support the periodic review of PEOs, SO, and Program Criteria.

B. Course Syllabi

Course syllabi will be available for review during the ABET team visit.

C. Advisory Committee

The CWU EET program has an Industrial Advisory Board (IAB) that provide the program faculty with information across all areas of the program. The IAB was previously referred to as Industry Advisory Committee (IAC) until the change to IAB was implemented in spring 2017. The IAB is comprised of regional experts in the field of Electrical/Electronics engineering. Several members are also CWU alumni. A list of current IAB members and their professional affiliations are provided in Table 5C-1. The board provides feedback on program topics and content as well as review of Program Educational Objectives, Student Outcomes, and Program Specific Criteria. The board also gives faculty an indication of how their companies are performing and what hiring needs they may have at the time. In addition, the board provides information about the new or existing directions in industry that the program should be aware of in order to continually improve and provide students that are prepared for the current workforce. The board meets bi-annually: once

during fall quarter, and once during spring quarter. Meeting minutes from the past several meetings are provided in Appendix A. The meeting minutes provide the evidence required to show that the IAB is assisting the program in periodic review of curriculum, student outcomes, and program educational objectives.

In fall 2016, new by-laws were introduced to the IAB. The board made some slight modifications, and the by-laws were enacted during the spring meeting. These by-laws are included in Appendix A.

Member	Position	Affiliation	Alumni	Employer
Cassandra Armstrong	Electronic Engineer	Rosemount Specialty Products	x	x
Kevin Bremer	Senior Manager - Airplane Systems Engineering	Boeing	x	x
Randy Groves	Electrical Maintenance Engineer	Grant County PUD		x
John Goes	Electrical Engineer	Grant County PUD	x	x
Vern Kissner	Strategic Consultant	Utility Technology Solutions	x	
Chris Springer	IT Systems Integration Manager	Zirkle Fruit	x	x
Thomas Lackie	Current student	CWU IEEE Student Branch Chair		

Table 5C-1: CWU EET Industry Advisory Board Members, 2016-2017

Table 5A-1 Curriculum

CWU Bachelor of Science in Electronics Engineering Technology

Course (Department or Program, Number, Title)	Indicates Whether Course is Required, Elective, or a Selective Elective by an R, an E or an SE[2]	*Curricular Area (Credit Hours)*				Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Average Section Enrollment for the Last Two Terms the Course was Offered[1]
		Math & Basic Sciences	Discipline Specific Topics	General Education	Other		
CWU General Education Program							
CWU Basic Skills Requirements							
UNIV 101 – Academic Advising Seminar	R			*1*		*W17, Sp17*	
ENG 101 – Composition I: Critical reading	R			*4*		*W17, Sp17*	
ENG 102 – Composition II: Reasoning	R			*4*		*W17, Sp17*	
Math (pre-calculus or calculus)	R	5				*W17, Sp17*	
Computer Science Elective	R			*3*		*W17, Sp17*	
CWU Breadth Requirements							
Arts & Humanities I	R			*5*		*W17, Sp17*	
Arts & Humanities II	R			*4 or 5*		*W17, Sp17*	
Arts & Humanities III	R			*5*		*W17, Sp17*	
Social & Behavioral Sciences I	R			*5*		*W17, Sp17*	
Social & Behavioral Sciences II	R			*3, 4, or 5*		*W17, Sp17*	
Social & Behavioral Sciences III	R			*4 or 5*		*W17, Sp17*	
The Natural Sciences I	R	5				*W17, Sp17*	
The Natural Sciences II	R	4 or 5				*W17, Sp17*	
The Natural Sciences III	R	4 or 5				*W17, Sp17*	

EET Core Courses:							
CS 110 – Programming Fundamentals I	R		*4*			*W17, Sp17*	
EET 221 – Basic Electricity	R		*3*			*F16, Sp17*	
EET 221LAB – Basic Electricity Lab	R		*1*			*F16, Sp17*	
EET 271 – Digital Circuits	R		*4*			*W16, W17*	
EET 312 – Basic Electronics	R		*4*			*W15, W16*	
EET 323 – Active Linear Circuits	R		*4*			*Sp16, Sp17*	
EET 325 – Electrical Networks	R		*4*			*W16, W17*	
EET 343 – Process Control	R		*4*			*Sp16, Sp17*	
EET 372 – Advanced Digital Circuits	R		*4*			*Sp16, Sp17*	
EET 373 – Introduction to Embedded Programming	R		*4*			*F16, F17*	
EET 374 – Microprocessors	R		*4*			*F16, F17*	
EET 376 – Advanced Microprocessors	R		*4*			*W16, W17*	
EET 426 – Advanced Electrical Networks	R		*4*			*Sp16, Sp17*	
EET 452 – Computer Networks	R		*4*			*Sp16, Sp17*	
ETSC 241 – Programmable Logic Controllers	R		*4*			*W17, Sp17*	
ETSC 242 - Instrumentation	R		*4*			*W16, F16*	
ETSC 301 – Engineering Project Cost Analysis	R		*4*			*W17, Sp17*	
Students select <u>two</u> of the following pre-approved elective sequences:							
EET 332 – Generation of Electrical Power	SE		*4*			*W15, W17*	
EET 433 – Transmission of Electrical Power	SE		*4*			*Sp15, Sp17*	
Or							
ETSC 490 – Cooperative Education	SE		*8*			*S15, S16*	
Or							
CS 111 – Programming Fundamentals II	SE		*4*			*W17, Sp17*	
CS 301 – Data Structures	SE		*4*			*F16, Sp17*	
Math Requirement							
Math 172 – Calculus I	R	5				*W17, Sp17*	
Math 173 – Calculus II	R	5				*W17, Sp17*	

Math Elective (Students select one of the following)							
MATH 260 – Sets and Logic	SE	5				*W17, Sp17*	
MATH 272 – Multivariable Calculus I	SE	5				*W17, Sp17*	
MATH 311 – Statistical Concepts and Methods	SE	5				*W17, Sp17*	
MATH 330 – Discrete Mathematics	SE	5				*W17, Sp17*	
MATH 376 – Differential Equations I	SE	3				*W17, Sp17*	
Physics Requirement (Students select one Physics sequence)							
PHYS 111 – Introductory Physics I and Lab	SE	5				*W17, Sp17*	
PHYS 112 – Introductory Physics II and Lab	SE	5				*W17, Sp17*	
PHYS 113 – Introductory Physics III and Lab	SE	5				*Sp16, Sp17*	
Or							
PHYS 181 – General Physics I and Lab	SE	5				*F16, W17*	
PHYS 182 – General Physics II and Lab	SE	5				*W17, Sp17*	
PHYS 183 – General Physics III and Lab	SE	5				*Sp16, Sp17*	
Speech Requirement (Students select one of the following)							
ETSC 389 – Technical Presentations	SE				*3*		
Or							
COM 207 – Introduction to Communication Studies	SE				*4*	*W17, Sp17*	
Or							
COM 345 – Business and Professional Speaking	SE				*4*	*W17, Sp17*	
Writing Requirement (Students select one of the following)							
ADMG 385 – Business Communications and Report Writing	SE				*5*	*W17, Sp17*	
Or							
CS 325 – Technical Writing in Computer Science	SE				*3*	*W17, Sp17*	
Or							
ENG 310 – Technical Writing	SE				*4*	*W17, Sp17*	
Senior Capstone Sequence							
EET 487 – Senior Project Management	R		*2*			*F15, F16*	
EET 487LAB – Senior Project Management Lab	R		*2*			*F15, F16*	

EET 488 – Senior Project Quality	R		*2*			*W16, W17*	
EET 488LAB – Senior Project Quality Lab	R		*2*			*W16, W17*	
EET 489 – Senior Technical Presentations	R		*2*			*Sp16, Sp17*	
OVERALL TOTAL CREDIT HOURS FOR THE DEGREE	180						
PERCENT OF TOTAL		*~46%*	*~54%*	*~23%*	*~13%*		

1. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the average enrollment in each element.
2. Required courses are required of all students in the program, elective courses are optional for students, and selected electives are courses where students must take one or more courses from a specified group.

Instructional materials and student work verifying compliance with ABET criteria for the categories indicated above will be required during the campus visit.

CRITERION 6. FACULTY

A. Faculty Qualifications

There are three faculty members assigned to the EET program. The three faculty include a tenured associate professor, a tenure-track assistant professor, and a part-time lecturer. This provides adequate instructional capacity to offer all of the core classes on an annual basis and at least three electives taught at least once every other year with the remaining electives selected from specialty areas in the Physics, Mathematics, or ETSC departments.

Mr. Lad Holden is an associate professor who is allocated 100% to the EET program and serves as the EET Program Coordinator. Mr. Holden completed his Master of Technology at Arizona State University in 1994. He specializes in micro-controller and instrumentation systems and teaches approximately 36 credits per year in the EET program.

Mr. Greg Lyman is an assistant professor who is allocated 100% to the EET program. Mr. Lyman completed his Master of Technology from Central Washington University in 2012. He specializes in analog and digital systems and engineering education, and teaches approximately 36 credits per year in the EET program. Mr. Lyman is responsible for organizing and coordinating the EET Industry Advisory Board meetings, and also serves as the advisor to the IEEE student branch at CWU.

Mr. Jeff Wilcox is a part-time lecturer and full-time engineering technician who is allocated approximately 80% to the EET program. Mr. Wilcox completed his Master of Technology from Central Washington University in 2015. He specializes in embedded programming and microprocessors and teaches approximately 12 credits per year for the EET program.

During the previous ABET team visit, the CWU EET program lacked full-time tenured or tenure-track faculty members. Nathan Davis left CWU only weeks before the ABET visit, and Lad Holden was assigned 75% ETSC chair duties. At the time of the visit, the program employed Christopher Hobbs, a full-time lecturer to assist with the teaching of courses. As evidenced in the senior survey results described in Criterion 4 Mr. Hobbs was not a good fit for the EET program, thus his contract was not renewed. In addition, Lad Holden stepped down from ETSC chair duties in order to devote full-time workload to the EET program. Greg Lyman was hired in September 2016 to replace Nathan Davis as a full-time tenure-track faculty member for EET. In response to the Criterion 6 weakness as described in the previous ABET visit report, the faculty contracts for Mr. Lyman, Mr. Wilcox, and a letter from the CEPS dean regarding Mr. Holden's reappointment as EET program coordinator and removal of department chair duties are included in Appendix B.

B. Faculty Workload

The faculty of CWU was unionized in 2006. Workloads and other workload issues are governed by the Collective Bargaining Agreement (CBA) and the Faculty Code, with the CBA taking precedence in the event of a conflict. A full-time workload is defined as 45 workload units (WLU) per year. Each WLU is equivalent to one lecture contact hour. A two-hour lab is also considered two WLU (but only one credit for students). Research/Scholarship and service tasks (such as program coordination, department and college committees, etc.) are also given WLU credit. In general, a typical full-time instructor may have 36 WLU assigned to teaching with the remaining nine WLU split between research and service categories. Details of the workload assignments for each EET faculty are given in Table 6-2.

C. Faculty Size

The faculty size is sufficient for continued operation of the program, where attainment of student outcomes in order to meet the program educational objectives can be achieved on an annual cycle.

D. Professional Development

Within the ETSC department, faculty members are encouraged to attend at least one professional society conference each year, and many faculty members attend more than one. This is true for both tenured/tenure-track and non-tenure track faculty. In addition, there are opportunities for attending appropriate off-campus training seminars.

Funding for tenured and tenure track faculty professional development is in the form of annual funding of $700 per faculty member from the provost's office, with an additional $300 from the Dean of the college (CEPS). If a faculty member is presenting a peer reviewed paper at the conference/seminar, the office of the Dean of Graduate Studies will provide an additional $300 in funding. Beyond this $1300 of annual funding, the ETSC department also contributes funding from discretionary fund accounts, and industry funding provided through the CWU foundation accounts may be available. For non-tenure track faculty, most funding comes from the department discretionary funds or foundation accounts.

Mr. Holden attends the Microchip conference yearly. Mr. Wilcox attended “NI Week” a National Instruments conference this past May. Mr. Lyman has attended the following during the past academic year:

- IEEE Region 6 meeting and conference, Oct 2016
- ABET Fundamentals of Program Assessment workshop, Oct 2016
- ASEE Pacific Northwest regional meeting, April 2017
- ABET Advanced Program Assessment workshop, April 2017
- ABET Symposium, April 2017
- ABET Self Study Workshop, April 2017

E. Authority and Responsibility of Faculty

The teaching faculty collectively is the major force governing the curriculum of the university. The faculty are instrumental in creating, modifying, and evaluating their courses. Faculty ideas for changes or additions to existing programs, or creation of new programs such as minors, majors or specializations, can come from the IAB, personal experiences, consultation and interactions with industry, and professional development opportunities such as conferences or workshops. Course/program creation, modification, and deletion follows a standard set of procedures established by university curricular policies prescribed under "CWUP 5-50 Curriculum Policies and Procedures." EET faculty initiate curriculum changes through the ETSC Department Chair and the College Dean. The changes are reviewed and approved by Registrar Services. In the case of a new program creation or program modification proposals, it is subject to examination by the provost/ vice president for academic and student life. The approved proposals are then reviewed by the Faculty Senate curriculum committee, and posted for 14-day campus review. Some are subject to further review by the higher education coordinating board and the board of trustees. Each faculty member is responsible for the evaluation of student outcomes within their specific courses. The program faculty defines the program educational objectives and student outcomes. The faculty uses input from program constituents; however, the final definition of these is determined by the program faculty.

The CWU policies for curriculum matters, including jurisdiction and authority can be found at the following website:
http://www.cwu.edu/resources-reports/cwup-5-50-curriculum-policies-and-procedures

More details about the curriculum change process can also be accessed on the CWU Faculty Senate website:
http://www.cwu.edu/faculty-senate/curriculum-and-general-education-forms

Table 6-1. Faculty Qualifications

CWU Electronics Engineering Technology

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT[3]	Years of Experience			Professional Registration/ Certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Lad Holden	MT in Computer and Electronic Engineering Technology, Arizona State University, 1994	ASC	T	FT	5	18	18	N/A	M	M	L
Greg Lyman	MS in Engineering Technology, Central Washington University, 2012	AST	TT	FT	10	2	2	N/A	H	H	L
Jeff Wilcox	MS in Engineering Technology, Central Washington University, 2015	I	NTT	PT	14	4	2	N/A	L	M	L

Updated information will be provided at the time of the visit.

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other
2. Code: TT = Tenure Track T = Tenured NTT = Non-Tenure Track
3. At the institution
4. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.

Table 6-2. Faculty Workload Summary

CWU Electronics Engineering Technology

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution[3]			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	
Lad Holden	FT	Fall 2016: ETSC 101 (5 cr.); EET 373 (4 cr.); EET 487 (2 cr.) Winter 2017: EET 325 (4 cr.); EET 452 (4 cr.); EET 332 (4 cr.) Spring 2017: EET 426 (4 cr.); EET 323 (4 cr.); EET 343 (4 cr.); EET 489 (1 cr.)	80%	14%	6%	100%
Greg Lyman	FT	Fall 2016: EET 221 (6 cr.); EET 487 (2 cr.); ETSC 242 (4 cr.) Winter 2017: EET 271 (7 cr.); EET 488 (4 cr.) Spring 2017: EET 221 (6 cr.); EET 433 (4 cr.); EET 489 (3 cr.)	80%	14%	6%	100%
Jeff Wilcox	PT	Fall 2016: EET 374 (4 cr.) Winter 2017: EET 376 (4 cr.) Spring: EET 372 (4 cr.)	100%			25%

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the Self-Study Report is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.

CRITERION 7. FACILITIES

This Interim Report is focused on addressing the weaknesses presented to the EET program during the previous ABET evaluation cycle. No weaknesses were found for Criterion 7.

CRITERION 8. INSTITUTIONAL SUPPORT

This Interim Report is focused on addressing the weaknesses presented to the EET program during the previous ABET evaluation cycle. No weaknesses were found for Criterion 8.

PROGRAM CRITERIA

A. Electronics Engineering Technology Program Criteria

The CWU EET program utilizes program-specific criteria as part of the Continuous Improvement process outlined in Criterion 4. The EET program criteria (PCs) are reviewed annually, and input is solicited from constituencies of the program including the IAB, faculty and alumni. Modifications to the EET PCs are the responsibility of the program coordinator. The review schedule for PCs is included in Table PC-B-1.

Upon graduation, graduates of the EET program will have obtained the following core competencies:

1. Application of circuit analysis to the building, testing, operation, and maintenance of electrical / electronic circuits.
2. Application of circuit design to the building, testing, operation, and maintenance of electrical / electronic circuits.
3. Application of computer programming to the building, testing, operation, and maintenance of electrical / electronic circuits.
4. Application of associated software to the building, testing, operation, and maintenance of electrical / electronic circuits.
5. Application of analog electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.
6. Application of digital electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.
7. Application of microcomputers to the building, testing, operation, and maintenance of electrical / electronic circuits.
8. Application of industry codes, regulations, and engineering standards to the building, testing, operation, and maintenance of electrical / electronic circuits.
9. Application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical /electronic systems.
10. The ability to analyze, design, and implement instrumentation systems.
11. The ability to analyze, design, and implement computer systems.
12. The ability to apply project management techniques to electrical /electronic(s) systems.
13. The ability to utilize transform methods and differential and integral calculus to characterize electrical / electronic systems.

Based on program review and faculty discussions, Table PC-A-1 shows the student outcome to course mapping.

CWU EET Program Criteria-to-Course Cross Reference												
Program Criteria	**Course**											
	EET 312	EET 323	EET325	EET 343	EET 372	EET 374	EET 376	EET 426	EET 452	EET 487	EET 488	EET 489
C.a.1. Application of circuit analysis to the building, testing, operation, and maintenance of electrical / electronic circuits.			×									
C.a.2. Application of circuit design to the building, testing, operation, and maintenance of electrical / electronic circuits.		×										
C.a.3. Application of computer programming to the building, testing, operation, and maintenance of electrical / electronic circuits.						×						
C.a.4. Application of associated software to the building, testing, operation, and maintenance of electrical / electronic circuits.		×										
C.a.5. Application of analog electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.		×										
C.a.6. Application of digital electronics to the building, testing, operation, and maintenance of electrical / electronic circuits.					×							
C.a.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical / electronic circuits.							×					
C.a.8. Application of industry codes, regulations, and engineering standards to the building, testing, operation, and maintenance of electrical / electronic circuits.											×	
C.b. Application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical /electronic systems.	×											
C.c.1. The ability to analyze, design, and implement instrumentation systems.				×								
C.c.2. The ability to analyze, design, and implement computer systems.									×			
C.d. The ability to apply project management techniques to electrical /electronic(s) systems.										×		
C.e. The ability to utilize transform methods and differential and integral calculus to characterize electrical/ electronic systems.								×				

Table PC-A-1

Based on the template provided for this report in Criterion 4, the program criteria and the associated assessment methods are outlined as follows:

Program Criteria C.a.1

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Electrical Networks (EET 325), and via indirect measure in the EET senior exit survey. The direct measure involves an examination question where students demonstrate an ability to apply Ohm's Law and Kirchhoff's Voltage and Current Laws to the analysis of a circuit using node equivalencies. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Electrical Networks (EET 325) is offered every year during fall quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.1
    - Direct data: In previous years, this program criterion was directly assessed in EET 221, EET 312, EET 323 and EET 324 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 1.91 to 3.29. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated. The development of these measures happened after the course occurred, so data collection will begin in fall quarter 2017 and continue into future years.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 3.0/4 = 75%
            - Level of attainment met.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.2

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Active Linear Circuits (EET 323), and via indirect measure in the EET senior exit survey. The direct measure involves rubric

assessment of the student's ability to execute an analog hardware development process (design, implementation and verification). The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.

2. Frequency with which assessment processes are carried out: Active Linear Circuits (EET 323) is offered every other year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.2
    - Direct data: In previous years, this program criterion was directly assessed in EET 376, EET 478, and EET 479 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.25 to 3.17. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 83% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.2/4 = 80%
            - Level of attainment met.
        - Rating of teaching for the criteria: 2.8/4 = 70%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.3

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Microprocessors (EET 374), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to design instrumentation and measurement systems using analog-to-digital (A/D) converters. The indirect measure involves questions on the senior exit survey that query the student's perception on the

level of attainment that they achieved, as well as the quality of instruction and equipment.

2. Frequency with which assessment processes are carried out: Microprocessors (EET 374) is offered every year during fall quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.3
    - Direct data: In previous years, this program criterion was directly assessed in EET 370, EET 375, and EET 376 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.50 to 3.44. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 77% of the students meeting or exceeding expectations, thus expected level of attainment for the criterion was not met.
        - In order to improve on this criterion, the program is analyzing the instructional content being delivered before assessing the criteria. The rubric is also being reviewed.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.2/4 = 80%
            - Level of attainment met.
        - Rating of teaching for the criteria: 3.1/4 = 77.5%
            - Level of attainment met.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.4

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Active Linear Circuits (EET 323), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to use electronic test instruments and software tools to evaluate electronic circuits. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.

2. Frequency with which assessment processes are carried out: Active Linear Circuits (EET 323) is offered every other year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.4
    - Direct data: In previous years, this program criterion was directly assessed in EET 312, EET 323, EET 324 and EET 342 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.54 to 3.76. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 83% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.3/4 = 82.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 2.9/4 = 72.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the criteria: 3.4/4 = 85%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.5

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Active Linear Circuits (EET 323), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to analyze and implement electronic circuits containing operational amplifiers and other active linear devices. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Active Linear Circuits (EET 323) is offered every other year during spring quarter, so the direct

measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.

3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.5
    - Direct data: In previous years, this program criterion was directly assessed in EET 312, EET 323, and EET 324 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 3.20 to 3.26. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 67% of the students meeting or exceeding expectations, thus expected level of attainment for the criterion was not met.
        - In order to improve on this criterion, the program is analyzing the instructional content being delivered before assessing the criteria. The rubric is also being reviewed.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.1/4 = 77.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 2.9/4 = 72.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.6

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Advanced Digital Circuits (EET 372), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to design, construct and analyze sequential logic circuits. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Advanced Digital Circuits (EET 372) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.

3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.6
    - Direct data: In previous years, this program criterion was directly assessed in EET 371 and EET 372 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.14 to 3.78. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 90% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.3/4 = 82.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 3.0/4 = 75%
            - Level of attainment met.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.7

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Advanced Microprocessors (EET 376), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to design appropriate serial, USB, and/or TCP/IP communication systems for machine and user interface. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Advanced Microprocessors (EET 376) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.

4. Summaries of results for Program Criteria C.a.7
    - Direct data: In previous years, this program criterion was directly assessed in EET 370, EET 375, and EET 376 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.97 to 3.25. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 92% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.2/4 = 80%
            - Level of attainment met.
        - Rating of teaching for the criteria: 3.2/4 = 80%
            - Level of attainment met.
        - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.a.8

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Senior Project Quality (EET 488), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to apply engineering standards to the building, testing, operation, and maintenance in their work. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Quality (EET 488) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.a.8
    - Direct data: The Program Criteria for application of codes, regulations and engineering standards was not previously assessed by the CWU EET program. As part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be

assessed with 80% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis of these results, we believe that the performance indicators and level of attainment are appropriate for this outcome.

- Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
    - Students perceived achievement of the criteria: 3.5/4 = 87.5%
        - Level of attainment met.
    - Rating of teaching for the criteria: 3.4/4 = 85%
        - Level of attainment met.
    - Rating of laboratory equipment for the criteria: 3.5/4 = 87.5%
        - Level of attainment met.

5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.b

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Basic Electronics (EET 312), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to construct and analyze diode circuits. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Basic Electronics (EET 312) is offered every other year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.b
    - Direct data: In previous years, this program criterion was directly assessed in EET 312 and EET 342 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.86 to 3.11. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated, as the course was not offered. It will be offered next winter quarter, and the assessment process will occur at that time and into future years.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.2/4 = 80%

        - Level of attainment met.
    - Rating of teaching for the criteria: 2.8/4 = 70%
        - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
    - Rating of laboratory equipment for the criteria: 3.1/4 = 77.5%
        - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.c.1

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Process Control (EET 343), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to instrument, model and analyze a proportional controller. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Process Control (EET 343) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.c.1
    - Direct data: In previous years, this program criterion was directly assessed in EET 342 and EET 376 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.67 to 3.00. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 71% of the students meeting or exceeding expectations, thus expected level of attainment for the criterion was not met.
        - In order to improve on this criterion, the program is analyzing the instructional content being delivered before assessing the criteria. Assignment requirements and design are also being reviewed.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.1/4 = 77.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 2.7/4 = 67.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.

    - Rating of laboratory equipment for the criteria: 3.3/4 = 82.5%
        - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.c.2

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Computer Networks (EET 452), and via indirect measure in the EET senior exit survey. The direct measure involves an examination of the student's ability to analyze the operation of TCP/IP from system boot to data downloads. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Computer Networks (EET 452) is offered every year during spring quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.c.2
    - Direct data: In previous years, this program criterion was directly assessed in EET 375 and EET 452 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.88 to 3.00. This smaller range suggests that the outcome may potentially have been met; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the revision of assessment processes implemented during the recent academic year, this course was able to be assessed with 60% of the students meeting or exceeding expectations, thus expected level of attainment for the criterion was not met.
        - In order to improve on this criterion, the program is analyzing the instructional content being delivered before assessing the criteria. Exam structure and content are also being reviewed.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 2.8/4 = 70%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of teaching for the criteria: 2.8/4 = 70%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the criteria: 3.1/4 = 77.5%
            - Level of attainment met.

5. How results are documented and maintained: Graded examinations for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.d

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Senior Project Management (EET 487), and via indirect measure in the EET senior exit survey. The direct measure involves rubric assessment of the student's ability to develop and propose a technical project using project management techniques. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Senior Project Management (EET 487) is offered every year during fall quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.d
    - Direct data: In previous years, this program criterion was directly assessed in IET 455, IET 301, EET 478 and EET 479 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 1.63 to 2.63. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, as part of the implementation of new assessment processes developed throughout the recent academic year, this outcome has a new rubric and threshold assigned but does not have new direct data associated. The development of these measures happened after the course occurred, so data collection will begin in fall quarter 2017 and continue into future years.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 3.5/4 = 87.5%
            - Level of attainment met.
        - Rating of teaching for the criteria: 3.3/4 = 82.5%
            - Level of attainment met.
        - Rating of laboratory equipment for the criteria: 3.2/4 = 80%
            - Level of attainment met.
5. How results are documented and maintained: Graded rubrics for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

Program Criteria C.e

1. Description of assessment processes: This program criterion is currently assessed via direct measure in Advanced Electrical Networks (EET 426), and via indirect measure in the EET senior exit survey. The direct measure involves an examination of the student's ability to analyze circuit operations and characteristics using analog circuits transfer functions. The indirect measure involves questions on the senior exit survey that query the student's perception on the level of attainment that they achieved, as well as the quality of instruction and equipment.
2. Frequency with which assessment processes are carried out: Advanced Electrical Networks (EET 426) is offered every year during winter quarter, so the direct measure assessment occurs at the end of each quarter that the course is taught. The indirect measure assessment occurs during the senior exit survey.
3. Expected level of attainment: For direct assessment, at least 80% of the students meet or exceed expectations (grade of 70% or greater). For indirect assessment, an average score of 75% or better (3 or higher on the 4-point scale), see Figure PC-B-3 for an example of a survey question.
4. Summaries of results for Program Criteria C.e
    - Direct data: In previous years, this program criterion was directly assessed in EET 324 with assessment occurring on a 4-point scale and no stated threshold for attainment. The average scores ranged from 2.50 to 3.50. This range suggests a need for revision of the performance indicators utilized to measure the attainment of the outcome; however, without a specified level of attainment it proved difficult to assess attainment of the outcome. To improve upon this, and as part of the implementation of new assessment processes developed throughout the recent academic year, this course was able to be assessed with 100% of the students meeting or exceeding expectations, thus the level of attainment for the outcome was met. Upon analysis that 100% of students met the outcome, the program faculty is re-visiting the designated performance target of the performance indicators, as the target may need to be revised.
    - Indirect data: This program criteria was indirectly assessed in the recent senior exit survey, with the following results
        - Students perceived achievement of the criteria: 2.9/4 = 72.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of teaching for the criteria: 2.5/4 = 62.5%
            - Level of attainment not met due to instructor. Mr. Hobbs has since been removed from the EET program.
        - Rating of laboratory equipment for the criteria: 2.8/4 = 70%
            - Level of attainment not met. The EET program is looking in to options to obtain specific equipment for this course.
6. How results are documented and maintained: Graded examinations for the direct measure and senior exit surveys for the indirect measure are saved and stored for assessment purposes.

B. Continuous Improvement of Program Criteria

In response to the ABET accreditation report received in August 2016, and with thorough analysis of the program by current faculty and input from the IAB, it was deemed that the assessment processes utilized in previous years as related to the continuous improvement of the program were inefficient and incomplete. Major changes to the continuous improvement process have been implemented as of fall quarter 2016:

- The previous 4-point scale for program criteria assessment was changed to a percentage scale, with a defined threshold for attainment of the criteria. Figure PC-B-1 shows an example of the previous 4-point scale of criteria assessment. Figure PC-B-2 shows an example of the new percentage scale of program criteria assessment.

9.A.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical/ electronic circuits.	EET 370	Developing	ND	2.93	3.29	2.70	ND	3.14	3.02
	EET 375	Developing	3.50	2.50	2.73	3.67	ND	ND	3.10
	EET 376	Accomplished	ND	2.70	3.10	3.25	ND	ND	3.02

Figure PC-B-1: Previous program criteria assessment method (4-point scale)

Program Criteria - C.a.7.					
C.a.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical / electronic circuits	80%	Does Not Meet Any Expectation	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
Winter 2016	100%				100%
Winter 2017	92%	8%			92%

EET 376 Course Outcome	
Outcome	Assessment
4. The student will be able to demonstrate an ability to design appropriate, serial, USB, and/or TCP/IP communication systems for machine and user interface.	The student will design and implement a system that will move data from a sensor to a machine and allow the user to monitor and control the system. The instructor, using a rubric, will evaluate the systems ability to transfer data and for the user to control the system. The expected level of attainment for the outcome is at least 80% of the students meet or exceed expectations (grade of 70% or greater).

Figure PC-B-2: Current program criteria assessment method (percentage)

- Thresholds to assess level of attainment were assigned to each program criteria. As an example, in Figure PC-B-2 the expected level of attainment for PC C.a.7 is 80% of students will meet or exceed expectations.
- A new senior exit survey was developed by program faculty to assist in the indirect measure of assessment for program criteria. Figure PC-B-3 shows an example of the outcomes based survey.

Program Criteria - C.a.7. EET 376	1	2	3	4
C.a.7. The student will be able to demonstrate an ability to design appropriate, serial, USB, and/or TCP/IP communication systems for machine and user interface.	Does Not Meet Any Expectation	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
Rate your percieved achivement of this outcome.	☠	☹	😐	☺
comments:				
Rate the teaching of this outcome.	☠	☹	😐	☺
comments:				
Rate the Laboratory Equipment, Computers, and Software utilized in your learning experience of this outcome.	☠	☹	😐	☺
comments:				

Figure PC-B-3: Example of senior survey question regarding PC C.a.7

- Leaner Outcomes revised to meet university requirements were mapped to ABET program criteria. Table PC-A-1 shows the mapping of program criteria to EET core courses.
- During the 2016-2017 academic year, the CWU EET Industry Advisory Board met twice, once in fall and once in spring. These meetings were several hours long as discussions and approvals of assessment changes occurred.
    - Criterion 4 discussed the assessment changes from a 4-point scale to a percentage scale in detail and that discussion applies to this Program Criteria section as well. Refer to Criterion 4B for snippets from IAB meeting notes where review and approval occurred.
- The complete IAB meeting notes are included in Appendix A.
- The thresholds to determine expected levels of attainment for student outcomes were also reviewed during the IAB meetings. The schedule for assessment and evaluation of program criteria by the Industry Advisory Board (IAB) is shown in Table PC-B-1

CWU EET Program
Schedule for Assessment and Evaluation of Program Criteria
Spring IAB Meetings

ABET Program Criteria	11-12	12-13	13-14	14-15	15-16	16-17
C.a.1. Application of circuit analysis to the building, testing, operation, and maintenance of electrical/ electronic circuits			■			■
C.a.2. Application of circuit design to the building, testing, operation, and maintenance of electrical/ electronic circuits	■			■		
C.a.3. Application of computer programming to the building, testing, operation, and maintenance of electrical/ electronic circuits		■			■	
C.a.4. Application of associated software to the building, testing, operation, and maintenance of electrical/ electronic circuits			■			■
C.a.5. Application of analog electronics to the building, testing, operation, and maintenance of electrical/ electronic circuits.	■			■		
C.a.6. Application of digital electronics to the building, testing, operation, and maintenance of electrical/ electronic circuits.		■			■	
C.a.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical/ electronic circuits.			■			■
C.a.8. Application of engineering standards to the building, testing, operation, and maintenance of electrical/ electronic circuits.	■			■		
C.b. Application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems.		■			■	
C.c.1. The ability to analyze, design, and implement instrumentation systems			■			■
C.c.2. The ability to analyze, design, and implement computer systems.	■			■		
C.d. The ability to apply project management techniques to electrical/electronic(s) systems		■			■	
C.e. The ability to utilize transform methods and differential and integral calculus to characterize electrical/ electronic systems.			■			■

Table PC-B-1: Schedule for Assessment and Evaluation of Program Criteria

C. Additional Information

Copies of the assessment instruments and materials referenced in sections A and B will be available for review at the time of the ABET team visit. All program change documents and IAB meeting notes will also be provided.

APPENDICES

APPENDIX A – CWU EET INDUSTRY ADVISORY BOARD MEETING NOTES AND NEW BY-LAWS

A list of current CWU EET IAB members and their professional affiliations are provided in Table 5C-1. The following meeting minutes are from the last four meetings.

EET Industry Advisory Board Spring 2017 Meeting
May 5th, 2017 1pm-5pm
Attendees:
EET Faculty/Staff: Greg Lyman, Lad Holden. Jeff Wilcox, Thomas Lackie (IEEE Chair)
IAC Members: Cassandra Armstrong, Kevin Bremer, Randy Groves, John Goes, Chris Springer

I. Initial discussion on new structure for the curriculum (to go in to effect AY 17-18)
   a. Removed the Co-op sequence as an alternative to capstone sequence. Co-op sequence will now be a pre-approved elective sequence
   b. Changes EET capstone sequence
      i. Titles have been changed
      ii. Credits increased
   c. Autocad (ETSC 160) was removed, will replace with Solidworks (ETSC 265) in next curriculum change cycle
   d. EET program will add a full year robotics sequence next AY
      i. EET 277 (Fall 2017). EET 377 (Winter 2018). EET 477 (Spring 2018)
   e. Discussed options for a potential Robotics and Automation minor
      i. IAB members unanimously agreed that a robotics minor with the term "automation" is important to employers.
      ii. The term "mechatronics" was discussed:
         1. Not one IAB member has heard this term in industry, and they recommended against using that term in the minor description
   f. **Motion to approve EET curriculum changes for AY 17-18: Unanimous board approval**

II. Review of Meeting minutes from last minute November 18th 2016
   Motion to approve minutes: moved by Bremer, seconded by Springer

III. Change to IAC By-laws
   a. Changed names from "**Committee/Council"** to "**Board"**
      i. **Industry Advisory Board (IAB)**
   b. Changed period of time in which members may stay on the board
   Motion to enact by-laws: Unanimous board approval

IV. Discussion on Indirect Measures for ABET assessment: surveys, questionnaire , ect
    a. Questions about the quality of content with respect to a class/professor/materials
    b. Direct measurements for ABET: test scores, quizzes, homework
    c. Indirect measurements for ABET: surveys, ect
    d. IAB members suggest to build surveys as follows
        i. For every ABET Student Outcome and Program Criteria:
            1. Question on Content, with a 4 point scale and comment box
            2. Question on Instructor, with a 4 point scale and comment box
            3. Question on Equipment/Resources, with a 4 point scale and comment box

V. Review of old ABET assessment structure versus new assessment structure
    a. Did not have appropriate threshold in old system
    b. Board was presented with old data forms.
        i. Board suggested to perform clean cut with data analysis and move to new system. Do not port over old data to new system.
        ii. Board did not want to assign threshold to old data
            1. **Motion to approve these decisions: Moved by Springer, seconded by Goes**

VI. Periodic review of Student Outcomes and Program Criteria per assessment schedule.
    a. SO 3.f and 3.i were slated for review in Fall 2016 meeting, but time ran out so they were added to this meeting
    b. Format of assessment forms review:
        i. Add course titles
        ii. Add rubrics and indirect data
        iii. Remove 2012 to 2015 rows since old data will not be imported
    c. Review of Student Outcome 3.f
        i. **Unanimous board approval**
    d. Review of Student Outcome 3.i
        i. Change “access” to “assess” in Assessment block
        ii. **Unanimous board approval**
    e. Review of Program Criteria C.a.1
        i. Add “apply” in Outcome block
        ii. **Unanimous board approval**
    f. Review of Program Criteria C.a.4
        i. Extra space removal needed in Assessment block
        ii. **Unanimous board approval**
    g. Review of Program Criteria C.a.7
        i. **Unanimous board approval**
    h. Review of Program Criteria C.c.1
        i. Change “myDAQ” to “myRIO” and add “Quanser” to Assessment block
        ii. **Unanimous board approval**
    i. **Motion to approve all criteria covered in this meeting: Moved by Springer, seconded by Groves**

VII. Open discussion
    a. For next Fall meeting:
        i. Would like to schedule before ABET visit
        ii. Consider Doodle poll to schedule for End of Sept. or 2nd week of Oct.
    b. Regarding Boeing internships for students
        i. Need to apply in fall (early fall)
    c. Discussion on project management certs and books
        i. PMI Cert and PMBOK guidebook
    d. Discussion of ETSC grad program being "on-hold"
        i. Several board members like the idea of a MS in project management

---

EET Industry Advisory Council Fall 2016 Meeting

November 18th, 2016 1pm-5pm

Attendees:

EET Faculty/Staff: Greg Lyman, Lad Holden. Jeff Wilcox, Thomas Lackie (IEEE Chair)

IAC Members: Kevin Bremer, Randy Groves, John Goes, Vern Kissner, Chris Springer

CWU Admin: Michoan Spoelstra, Bernadette Jungblut

I. Introductions

II. Approval of minutes from last meeting: Approved
    a. Review previous curriculum

III. New Business
    a. Vote in Council Leadership
        i. Chair: Kevin Bremer
            1. Term: 6/16/2016 - 6/16/2018
        ii. Vice Chair: Chris Springer
            1. Term: 6/16/2016 - 6/16/2018
    b. EET IAC By-Laws
        i. Suggestion from IAC to re-word or remove top bullet statement on page 2.
            1. Will review changes in Spring 2017 meeting
    c. EET faculty changes
        i. Lyman hired as FTTT
        ii. TQ retired. Des Moines campus closed
        iii. Holden steps down from chair, now full-time EET faculty and EET program coordinator
        iv. Wilcox hired as part-time lecturer
    d. EET Proposed Curriculum changes. Upon approval from IAC, the following changes will be submitted to the university for implementation in 2017/2018 AY catalog:
        i. Add PHYS11X series as an option for Physics requirement
        ii. Add EET 343 Process Control to the core requirements and part of senior year sequences
        iii. Split Lab out of EET 221: Basic Electricity
            1. Creation of EET221Lab (1credit), 2 sections.

iv. Remove 490 as an alternative for EET capstone sequence
v. Remove ETSC 160: CAD
    1. Suggestion from IAC (Goes) to keep some form of CAD requirement
        a. EET faculty will add ETSC 265 to curriculum
vi. Remove Math 265 as a requirement. Keep as an elective
vii. Remove ETSC 380: Quality Control
viii. Remove ETSC 455: Project Management
ix. Add Relevant Quality Control and Project Management student outcomes to EET capstone sequence
    1. Suggestion from IAC (Goes) to keep Quality and Project Management terms in titles of courses
        a. EET faculty will title the EET capstone sequence as following:
            i. EET 487 – Senior Project Management
            ii. EET 488 – Senior Project Quality
            iii. EET 489 – Senior Technical Presentations
x. Offer 3 elective sequences
    1. Power sequence: EET 332 and EET 433
    2. CS sequence: CS 111 and CS 311
    3. CO-OP sequence: 8 credits of cooperative education

e. ABET accreditation discussion
    i. Review of Program Educational Objectives
        1. Suggestion by IAC (Kissner) to change wording of PEO 4
            a. Proposed new wording for PEO 4: "CWU EET program graduates will be encouraged to participate in professional community organizations"
                i. Motion to approve PEOs:
                    1. Moved by Kissner, seconded by Goes
                        a. Unanimous board approval
    ii. Review of ABET 2016-2017 changes to Learning Outcomes and Program Criteria
        1. Suggestion by IAC (Goes) to re-word Program Criteria C.a.8
            a. Proposed new wording for PC C.a.8: "Application of industry codes, regulations, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic circuits"
                i. Motion to approve C.a.8
                    1. Moved by Goes, seconded by Groves
                        a. Unanimous board approval
        2. Motion to approve all Program Criteria (C.a.1 though C.e)
            a. Moved by Springer, seconded by Goes
                1. Unanimous board approval
        3. Motion to approve all Student Outcomes (A through K)
            a. Moved by Springer, seconded by Bremer
                1. Unanimous board approval

iii. Review of rubric structure used in program assessment
1. EET faculty requests to move from a 0-4 point scale to a percentage scale
a. Motion to adopt percentage methodology
i. Moved by Kissner, seconded by Springer
1. Unanimous board approval
b. Motion to adopt 4-column evaluation structure: Meets No Expectations, Meets some Expectations, Meets Expectations, and Exceeds Expectations.
i. Moved by Bremer, seconded by Springer
1. Unanimous board approval
c. Motion to assign 85% threshold to SO 3.c
i. Moved by Springer, seconded by Kissner
1. Unanimous board approval

f. IAC growth
i. Talk to colleagues, other alumni.
g. Open discussion
i. Industry collaboration for student work and projects

IV. Adjournment

EET IAC Meeting Notes 8 May 2015, 12pm, CWU Hogue 300N

Attendees: Nathan Davis, Greg Lyman, Christopher Hobbs, Chris Springer, John Goes, Randy Groves, Vern Kissner

1. Review minutes from fall meeting. Approved.
a. Review of older program criteria and data
2. Introduce curriculum updates
a. Power and Instrumentation sequence integrated to program core
b. Linear algebra (MATH265) added as requirement
c. Physics 111-113 was removed
d. Following courses were created or changed
i. EET 231 – Intro to Electrical Power
ii. EET 373 – Intro to Embedded Programming
iii. EET 444 – Supervisory Control Networks
e. IET prefix has changed to ETSC
3. ABET accreditation
a. Review data scheduled for review during the 2011-2012 and 2014-2015 academic years
b. Language changes for Student learning Outcomes
i. Review the re-worded outcomes, numbers 3.a through 3.k
4. Program Criteria and Outcomes
a. Review criteria 3.a, 3.d, 3.g and 3.j

b. Outcomes show fairly consistent data
c. Review outcome rubric for 3.a, 3.d, 3.g and 3.j

5. Next meeting will be during ABET visit in Fall 2015

EET IAC Meeting Notes 20 June 2014, 12pm, CWU Des Moines Rm381

Attendees: Nathan Davis, Greg Lyman, Vern Kissner, Cassandra Armstrong, T.Q. Yang

1. Review minutes from fall meeting. Approved.
    a. 2-year college articulation changes:
        i. 371 to 271
        ii. 312 to 212 (or somewhere in 200 level)
2. Review program outcomes and criteria.
    a. Review Cycle for ABET Accreditation
        i. This meeting will focus on 2012-13 data, in order to catch up from previously missed meetings
    b. Review Cycle for Program Criteria
        i. Table 4-1b from handout
            1. 9.A.3
            2. 9.A.6
            3. 9.a.1
            4. 9.c. (may look at options for alternating wording)
    c. Program Criteria Data Sheet
        i. Table 4-2b from handout
            1. Need to focus on gathering data for 9.c.
    d. Program Criteria Rubric
        i. Criteria EET 376 – 9.a.1 could be changed to EET 342. Also missing wording in box 3.
        ii. Criteria IET 380 – 9.c should be re-worded to not focus explicitly on LCL, more on control limits in general, distribution, etc.
    e. Review Cycle for Program Outcomes
        i. Table 4-1a from handout
            1. 3.b.
            2. 3.e. (may look at changing to IET 373)
            3. 3.h.
            4. 3.k. (should be assigned to senior project, EET 479)
    f. Program Outcomes Data Sheet
        i. Table 4-2 from handout
            1. Will continue with data acquisition
    g. Program Outcome Rubric
        i. Re-wording criteria EET 342 – 3.b (also change to EET 343)

ii. Criteria EET 489 – 3.h fix spelling errors
iii. Develop Criteria EET 479 – 3.k

3. Next meeting will be after finals week of Fall Quarter 2014

CWU IAB By-Laws

Central Washington University (CWU)
Electronics Engineering Technology Program
Industry Advisory Board (IAB) By-Law

Purpose: The primary purpose of the IAB is to: (1) advise in the development and implementation of the Program's strategic initiatives to maintain ABET accreditation and keep the EET program as a nationally recognized program; (2) provide feedback on matters of curriculum, facilities, and student quality in meeting industry needs; (3) assist in fundraising and laboratory equipment procurement; (4) assist in job placement; and (5) be advocates of the program.

Membership: The goal of the IAB is to represent a cross-section of the industry, including a membership that has a broad geographic dispersion (mostly western USA), distinct workplace missions and represents workforce diversity. The IAB shall consist of EET faculty and a minimum of 6 members from industry, with a minimum of 2 members being EET alumni. Vacancies will be filled at the IAB spring or fall meetings. In addition, the CWU Institute of Electrical and Electronics Engineers (IEEE) Student Section President will serve as an ex-officio member.

For members who may be encouraged or required to serve on non-profit or educational organization "Boards", they may refer to their IAB membership as serving on an Industry Advisory Board in outside correspondence.

Meetings: The board will meet twice a year. Meetings may be scheduled in Hogue Hall on CWU's main campus or in the Seattle area as needed.

Board Leadership

- The IAB leadership shall consist of a Chair and a Vice Chair, who will be elected from IAB members. The chair is responsible to work with the Electronics Engineering Technology (EET) faculty for developing meeting agendas, setting and communicating meeting times and conducting the meetings. The Vice Chair is responsible for fulfilling the Chair's duties in the absence of a Chair or at the Chair's request.

Terms of Appointment

- Terms of appointment for IAB membership shall be a four-year term. By mutual agreement of the IAB (decided by simple majority), an IAB Member may be reappointed to one additional term. Systematic replacement will be established with consideration given to staggered terms to promote new ideas and support a smooth operation for the board.
- Terms of appointment for IAB membership shall coincide with the CWU academic year. The term for members elected at the fall meeting will have a start date of the previous June 16 date. These members will have a partial term (approximately 3 ½ years). The term for those elected at the spring meeting will have a start date of the next June 16 date. Therefore, all terms shall begin June 16th. Since all positions have a reappointment clause, a partial term shall be treated as a full term.
- The Chair and Vice Chair will serve a two-year term that coincides with the CWU academic year that has a start date of June 16. By mutual agreement of the IAB (decided by simple majority), the Chair and Vice Chair may be reappointed to one additional term, given they have two years remaining in their IAB term. The Chair and Vice Chair shall be nominated and elected at the spring meeting. In the event of a vacancy in these positions, special elections may be conducted at the fall meeting. If elected at the fall meeting, the initial term will be limited to a partial term (approximately 1 ½ years) to coincide with the June 16 term start date. Therefore, all Chair and Vice Chair terms shall begin June 16th. Since these positions have a reappointment clause, a partial term shall be treated as a full term.
- A board member may resign at any time by giving written or verbal notice to the Chair.

Attendance Requirement: There is a 75% attendance requirement (measured over two years) for all Board Members in order to maintain membership. The Chair is to monitor and take action as needed.

APPENDIX B – FACULTY CONTRACTS

Greg Lyman – EET Tenure-Track Full-Time Faculty Contract

July 12, 2016

Mr. Greg Lyman
505 E. 1st Ave.
Ellensburg, WA 98926

Dear Mr. Lyman:

Welcome to Central Washington University (CWU)! On behalf of President James Gaudino, and with the concurrence of Provost Katherine Frank, I am pleased to offer you a position as a tenure-track Assistant Professor in the Engineering Technologies, Safety and Construction effective September 16, 2016.

The salary for this appointment is $63,000.00 and will be paid out in semi-monthly installments over nine months. Details of your appointment, including any special stipulations, are listed on the attached page(s).

This faculty appointment is subject to the terms and conditions of the following:

- 2013-2017 Collective Bargaining Agreement between CWU and United Faculty of Central, available at: http://www.cwu.edu/hr/faculty-contract;
- CWU Faculty Senate Academic Code, available at: http://www.cwu.edu/faculty-senate/;
- Applicable policies and procedures of CWU, available at: www.cwu.edu/resources_reports, including but not limited to divisional and departmental policies, standards, and procedures; and
- Applicable state and federal laws.

Faculty members should be familiar with the terms and conditions of their employment and comply with applicable policies, procedures, and laws.

In accordance with the Immigration Reform and Control Act of 1986, all employees of Central Washington University must be eligible to work in the United States as of the first day of employment. You will receive an email about one week prior to the start of your contract with instructions for completing I-9 and W-4 forms. Once you receive this email, please follow the instructions provided and complete the first section of your I-9 *on or before your first day of employment*. After completing/submitting the first section of your I-9, you must provide evidence of both identity and employment eligibility, within *three business days* of your first day of employment. Please be prepared to stop by our Human Resource (HR) Office, located in Bouillon 140, or the appropriate CWU Center, with the necessary identification for verification on the I-9 form to complete the hiring process. If you need a replacement social security card, please see http://www.ssa.gov/ssnumber/, or call Social Security toll-free at 800-772-1213. Please present a valid, off-campus, mailing address so that we can provide you with a W2.

Because this position is eligible for the university's retirement and insurance programs, you have *31 calendar days* from the date of hire to make decisions about your coverage and to

Lad Holden – Reappointment Letter from CEPS Dean

Central Washington University

MEMORANDUM

Date: June 27, 2017

To: ABET

From: Paul Ballard, Dean, College of Education and Professional Studies

RE: Lad Holden Administrative Assignments

On June 30, 2016, Professor Lad Holden completed his assignment as the Engineering Technology, Safety, and Construction department chair. He returned back to faculty on a full-time basis.

Beginning September 16, 2016, Professor Lad Holden assumed the responsibilities as the faculty coordinator for the Electronic Engineering Technology program. He will continue in this position until at least June 15, 2019.

Office of the Dean • College of Education and Professional Studies
400 East University Way • Ellensburg WA 98926-7415 • Office: 509 963 1411 • Fax: 509 963 1049
EEO/AA/TITLE IX INSTITUTION • FOR ACCOMMODATION E-MAIL: CDS@CWU.EDU

Jeff Wilcox – EET Part-Time Lecturer Contract (Multiple quarters)

Central Washington University

.LEARN .DO .LIVE

FILE COPY

February 6, 2017

Mr. Jeff Wilcox
203 N. Sampson Street
Ellensburg WA 98926

Dear Mr. Wilcox:

I am pleased to inform you that the Department of Engineering Technologies, Safety & Construction has recommended you for a fixed-term, non-tenure track appointment as a Lecturer for the period from 3/16/2017 to 6/15/2017. The salary for this appointment is $3056.04 and will be paid out in semi-monthly installments over three months.

As a Lecturer, you are assigned 4 workload units of instruction. Details of your appointment, including any special stipulations, are listed on the attached page(s). Your work assignment is subject to change.

This faculty appointment is subject to the terms and conditions of the following:

- 2013-2017 Collective Bargaining Agreement (CBA) between Central Washington University (CWU) and United Faculty of Central (UFC), available at http://www.cwu.edu/hr/faculty-contract;
- CWU Faculty Senate Academic Code, available at http://www.cwu.edu/faculty-senate/;
- Applicable policies and procedures of CWU, available at www.cwu.edu/resources-reports, including but not limited to divisional and departmental policies, standards, and procedures; and
- Applicable state and federal laws.

Faculty members should be familiar with the terms and conditions of their employment and comply with applicable policies, procedures, and laws.

In accordance with the Immigration Reform and Control Act of 1986, all employees of Central Washington University must be eligible to work in the United States as of the first day of employment. Central Washington University is required to have a valid, off-campus, mailing address for you so that we can provide you with a W2. You are responsible for verifying that we have the most current information on file.

This position may be eligible for the university's retirement and insurance programs. Review the attached benefits notice for additional information. If eligible, participation may be required and enrollment must occur within 31 calendar days of the beginning of the eligible contract. If you are eligible and you do not complete enrollment forms, you will be defaulted into coverage with

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Table D-1. Program Enrollment and Degree Data

CWU Electronics Engineering Technology

	Academic Year		Enrollment Year					Total Undergrad	Total Grad	Degrees Awarded			
			1st	2nd	3rd	4th	5th and above			Associates	Bachelors	Masters	Doctorates
Current Year	16/17	FT	5	11	9	6	4	35	N/A	N/A	(1.)	N/A	N/A
		PT	0	1	2	0	0	3	N/A				
1	15/16	FT	2	12	9	6	3	32	N/A	N/A	21	N/A	N/A
		PT	0	2	4	1	3	10	N/A				
2	14/15	FT	7	15	14	8	8	52	N/A	N/A	18	N/A	N/A
		PT	1	1	2	2	0	6	N/A				
3	13/14	FT	5	14	14	13	3	49	N/A	N/A	14	N/A	N/A
		PT	0	2	5	1	1	9	N/A				
4	12/13	FT	4	16	17	6	6	49	N/A	N/A	14	N/A	N/A
		PT	3	2	2	2	1	10	N/A				

1. Current year Degrees Awarded totals are still being conferred. Will update this number upon site visit.

FT--full time
PT--part time

Table D-2. Personnel

CWU Electronics Engineering Technology

Year[1]: 2016-2017

	HEAD COUNT		FTE[2]
	FT	PT	
Administrative[2]	2		0.35
Faculty (tenure-track)[3]	2		2
Other Faculty (excluding student Assistants)		1	.25
Student Teaching Assistants[4]	1		1
Technicians/Specialists	2		1
Office/Clerical Employees	1		.25
Others[5]			

Report data for the program being evaluated.

1. Data on this table should be for the fall term immediately preceding the visit. Updated tables for the fall term when the ABET team is visiting are to be prepared and presented to the team when they arrive.

2. Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.

3. For faculty members, 1 FTE equals what your institution defines as a full-time load.

4. For student teaching assistants, 1 FTE equals 20 hours per week of work (or service). For undergraduate and graduate students, 1 FTE equals 15 semester credit-hours (or 24 quarter credit-hours) per term of institutional course work, meaning all courses — science, humanities and social sciences, etc.

5. Specify any other category considered appropriate, or leave blank.

Signature Attesting to Compliance

By signing below, I attest to the following:

That _____ (*Name of the program(s)*) has conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with ABET's *Criteria for Accrediting Engineering Technology Programs* to include the General Criteria and any applicable Program Criteria, and the ABET *Accreditation Policy and Procedure Manual*.

_____

Dean's Name (As indicated on the RFE)

_____ _____

Signature **Date**