ABET
Self-Study Report

for the

Bachelor of Science in
Electronics Engineering Technology

Program

at

Central Washington University
Ellensburg Washington

Draft Revision June 12, 2015

Table of Contents

BACKGROUND INFORMATION

A. Contact Information

Engineering Technology, Safety and Construction Department Chair:
Lad Holden, ETSC Department Chair
400 East University Way, Mail Stop 7584
Ellensburg, WA 98926-7584
Email: holdenl@cwu.edu
Tel# 509-963-1756 Fax# 509-963-1795

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. 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. In 2008, with input from the Industrial Advisory Committee (IAC), the curriculum was revised to better meet the needs of graduates and the programs other constituent groups. By request of the Academic Affairs Committee, the specializations were removed in 2012 as a result of low enrollment in the Computer Engineering Technology Specialization. The program was re-structured so that students were required to complete two of three sequences that provided depth in computer engineering technology, instrumentation, or power systems that complemented 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 program was moved to the CWU-Des Moines Center in 2006 after Pierce College discontinued its EET associate degree program. The move also made it possible for the ETSC department to offer all of its western Washington programs on one campus to more effectively use its resources. The program will be discontinued spring 2016 to consolidate faculty resources onto the main Ellensburg campus upon retirement of Dr. Yang.

Overall EET program enrollment (as measured by declared majors, Fall quarter, see Table1-2a) has been growing steadily in recent years. Currently there are 56 (accessed 5May15) declared EET majors. Graduates of the EET program account for approximately 15% of the graduates from the ETSC department as shown in Table B-1. Table B-2 shows a sampling of the industry, company and job titles for recent graduates.

Table B-1: Bachelor of Science Degrees Awarded by ETSC Department by Year

ETSC BS Degrees Awarded	2009-10	2010-11	2011-12	2012-13	2013-14
Construction Management	33	38	31	23	25
Safety & Health Management	36	27	18	32	34

Electrical Engineering Technology	**10**	**14**	**13**	**14**	**14**
Mechanical Engineering Technology	17	12	10	21	22
Industrial Technology	7	17	6	9	23
Industrial Education – Broad Area	4	5	2	3	2
ETSC Total BS degrees:	107	113	80	102	122

Data from Institutional Effectiveness Office, Jan 2015. Data for 2014-15 and later not available at this time.

Table B-2: Employment Information for recent EET Graduates

ID Code	Yr grad	Industry	Company	Job Title
	2014	Electronic Distribution	Arrow Electronics	Account Representative
	2014	Electrical Power	SEL Schweitzer Engineering Labs	Fault Analysis Tech
0821	2013	Component Mfg.	Rosemount Specialty Products	Electrical Engineer
4115	2013	Oil Energy	Schlumberger	Field Specialist
O978	2013	Transportation	Sygnet LLC	Electrical Engineer
3993	2013	Military	DISA-JITC	Electronics Engineer
0477	2013	Engineering/Construction	Bechtel Corporation	Electrical Field Engineer
6279	2012	Engineering/Construction	Design Air Ltd.	Project Manger
3947	2012	Automotive	Kenworth Truck Co.	Electrical Design Engineer
1257	2012	City Utilities	City of Ellensburg	Engineer
1565	2011	Information Technology	SCC	Principal Estimating Eng.
4327	2011	Electronics Mfg.	Schippers and Crew, Inc.	Test Technician
0967	2011	Component Mfg.	Rosemount Specialty Products	Electrical Engineer
5888	2011	Telecommunications	General Communication Inc.	RF Engineer
0736	2011	Aerospace	Boeing	Systems Engineer
7838	2010	Information Technology	Trident Technical College	Network Administrator
3880	2010	Software	Apollo Video Technologies	SDET
5443	2010	Electrical Construction	Helix Electric	Electronics Estimator
0211	2010	Automotive	Grakon	Electrical Engineering Tech
8353	2009	Entertainment	Nintendo	Electronics Tech
0808	2009	Healthcare	Philips Healthcare	Test Technician Lead
1058	2009	Transportation	Boeing	Avionics Engineer
6550	2009	Software/Hardware Mfg.	Intel	Software Engineer
6650	2009	Transportation	Zonar	Engineering Support
2540	2009	Oil Energy	Quest Integrity Group	Electronic Tech

Summary of EET Program Events since the last ABET Accreditation Visit

Since the 2009 ABET accreditation visit, the EET program has moved from Hebeler Hall into the Hogue Technology Building, which was remodeled and expanded in 2011. This provided additional classroom and lab space, with dedicated lab space for analog, digital, microprocessor, and power labs. In addition, the computer labs were expanded and updated, and dedicated space for the senior projects lab was allocated.

The major program change involved the conversion of degree from degree 'options' to elective sequences. As mentioned previously, the elective

Since the last review, Nathan Davis was hired in 2011 as a tenure track assistant professor, replacing John (Jack) Gumaer, who left the program unexpectedly. In 2012, Lad Holden was appointed Department Chair by the Dean of CEPS. This appointment

resulted in a significant shortage of instruction which was partially offset by the appointment of Christopher Hobbs as an adjunct instructor in 2013 and of a graduate teaching assistant to teach two courses per year. Upon the retirement of Dr. Yang in 2016, a search for a full time tenure track professor for the EET program will be initiated.

C. Options

The EET program provides three elective sequences with additional depth in computer science, instrumentation, and electrical power systems. Since most EET courses are offered only once a year, this approach simplified the administration of degree checkout for the Registrar's office and workload for faculty advisors by reducing the need for substitution forms for elective courses if students missed a class when it was offered.

Details of the courses in each sequence are outlined in Table C-1.

Table C-1: Summary of elective sequences

Computer Science Sequence	
CS 111: Programming Fundamentals II	4
CS 301: Data Structures	4
CS 302: Advanced Data Structures	4
Total	12
Instrumentation Sequence	
EET 242: Instrumentation	4
EET 343: Process Control	4
EET 445: Electro-Mechanical Control	4
Total	12
Power Sequence	
IET 160: Computer-aided Design and Drafting	4
EET 332: Generation of Electrical Power	4
EET 432: Transmission and Distribution of Electrical Power	4
Total	12

In addition to the elective sequences available within the degree, students are encouraged to complete minors in Mathematics, Physics, or Computer Science. Recently, a dual degree program with the Mathematics department has been discussed, however, at this time, no options are available for this program.

D. Program Delivery Modes

The delivery mode for most courses in the EET program is a traditional lecture / laboratory format, with some web enabled content such as notes and quizzes provided through access to Canvas, which is the Learning Management System (LMS) utilized by CWU. A few core courses are available as web based courses (IET301 Engineering Project Cost Analysis, ENG310 Technical Writing), as are many general education courses. Evening sections are limited primarily due to availability of instructors. EET courses are periodically offered remotely from the Ellensburg campus to satellite locations to meet the needs of off campus students.

E. Program Locations

The Electronics Engineering Technology program is available on the main campus of Central Washington University in Ellensburg, Washington and through the Des Moines satellite campus until spring 2016. Through articulation agreements and course evaluation, courses may be transferred into the program from community colleges and state universities.

F. Public Disclosure

Program Education Objectives for the EET program at CWU are posted online at:

http://www.cwu.edu/engineering/eet-program-educational-objectives

Student Outcomes for the EET program at CWU are available online at:
http://www.cwu.edu/engineering/eet-student-outcomes

Annual student enrollment data & graduation data is available at:
http://www.cwu.edu/engineering/cwu-eet-program

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

Program Weaknesses

A **Weakness in ETAC Criterion 2,** Program Educational Objectives which states, "Each program must have in place: … a documented process by which the program educational objectives are determined and periodically evaluated based on the needs of the constituencies served by the program…" Evidence was submitted in the CEPS response dated October 24, 2013 and the weakness was **resolved** in the Summary of Accreditation Action dated August 1, 2014.

A **Weakness in ETAC Criterion 3,** Program Outcomes which states, "Each program must demonstrate that graduates have: … [i] an ability to understand professional, ethical, and social responsibilities, [j] a respect for diversity, and a knowledge of contemporary professional, societal, and global issues related to the discipline, [k] a commitment to quality, timeliness, and continuous improvement." Documentation was submitted in the Due Process Response dated October 24, 2013 demonstrating criterion 3.i and 3.j were satisfied by presenting student work samples and rubrics used to assess these student outcomes. Because these two criterion were resolved, the Summary of Accreditation Action dated August 1, 2014 reclassified this as a **Concern**, leaving only criterion 3.k to be addressed. This student outcome will be addressed in EET 479: Senior Projects II by requiring the students to develop and use Gantt charts and continuous process improvement strategies as part of the development portion of senior projects. Alternatively, if students elect to seek an internship in place of the senior project sequence, the students will be required to submit a report detailing how the company or organization of employment implements and maintains continuous process improvement in the product development cycle.

A **weakness in ETAC Criterion 4**, Continuous Improvement which states, "The program must use a documented process incorporating relevant data to regularly assess its program educational objectives and program outcomes, and to evaluate the extent to which they are being met. The results of these evaluations … must be used to effect continuous improvement of the program through a documented plan." The weakness was reported in the Draft Findings report of November 17, 2009 which noted that the self-study report was sparse and that the plan did not delineate how the assessment of learning outcomes is used to improve the program. The summary of Accreditation Action Final Statement dated August 1, 2014 noted that "No further action is expected from the program relative to assessment and evaluation of the extent to which program education objectives are attained" as a result of changes in the 2013-2014 criteria for Accrediting Engineering

Technology Programs. The summary noted that "the part of the weakness pertaining to student outcomes remains unresolved" and that the EET program needs to provide "appropriate documentation to demonstrate that the program is assessing and evaluating the extent to which student outcomes are being attained and that the results are systematically utilized as input for the continuous improvement of the program."

To address this weakness, Mr. Davis attended the ABET accreditation workshop held in Portland in 2013 and the Fundamentals of Program Assessment workshop held in Seattle in Fall of 2014. Following the Accreditation workshop in 2013, Mr. Davis implemented a student outcome and assessment review schedule with the IAC that accelerated the outcome review cycle to ensure that all student learning outcomes where reviewed in advance of completion of the self-study report. The accelerated outcome review schedule is shown in the table below.

Schedule for Assessment and Evaluation of Program Outcomes	2009-2010	2010-2011	2011-2012	Spring 2013	Fall 2013	Spring 2014	Spring 2015
ABET Student Outcomes							
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 non-technical 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.				■			■

In response to the review of the student outcomes and assessment results, the industrial advisory committee recommended the following changes.

- The introduction of a formal transfer policy to stipulate requirements of coursework completed at other institutions used to satisfy requirements of the EET program.
- The introduction of an introductory network analysis course (EET 313) to improve the student learning of content related to student outcome 3.b.
- The transition of Instrumentation (IET 342) from an upper division to a lower division course to provide an alternate entry point into the program and to provide a "beginning" assessment point for learning outcome 3.c.
- The revision of several rubrics to limit task specific objectives and to focus on tiered learning objectives.

A complete list of IAC minutes are available in Criterion 4, Section C.

Program Concerns

A **Concern in ETAC Criterion 8**, Support which states, "An advisory committee representing the organizations that employ graduates must be utilized to advise the program in establishing, achieving, and assessing its goals. The committee must periodically review program curricula and provide advisement on current and future needs of the technical fields in which graduates are employed." Evidence was submitted in the CEPS response letter dated October 24, 2013 and the concern was **resolved** in the Summary of Accreditation Action dated August 1, 2014.

GENERAL CRITERIA

CRITERION 1. STUDENTS

The ABET 2015 – 2016 Criteria for Accrediting Engineering Technology Programs, Criterion 2 states that "Student performance must be evaluated. Student progress must be monitored to foster success in attaining student outcomes, thereby enabling graduates to attain program educational objectives. Students must be advised regarding curriculum and career matters.

The program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution. The program must have and enforce procedures to ensure and document that students who graduate meet all graduation requirements."

A. Student Admissions

Students must apply to CWU for admission, and are accepted based on general entrance criteria. There is no administrative restriction on declaring the EET major at CWU, however the program requires that students complete English Composition (ENG 101, 102) and Pre-Calculus (MATH 153, 154) before applying. When the student meets with the program coordinator or an advisor to declare the major, the advisor will provide a suggested schedule based on the four year plan located at:

http://www.cwu.edu/engineering/sites/cts.cwu.edu.engineering/files/EET%20Four%20Year%20Plan.pdf

Once admitted to the program, students generally begin coursework in the fall quarter and, assuming only the pre-requisites have been met, are advised into:

- MATH 172: Calculus I
- CS 110: Programming Fundamentals I
- EET 221: Basic Electricity
- Writing or Speech Elective

If students enter the program after the fall quarter has started, several secondary entry points into the program have been developed. These entry points include EET 371: Digital Circuits, which has recently been changed from an upper division to a lower division course, and IET 242: Instrumentation during the winter quarter in addition to a second offering of EET 221: Basic Electricity in the spring.

Table 1-1 shows the minimum admissions standards for CWU in the past 5 years, along with the average values for the entering freshman class. Table 1-2a shows enrollment trends for the EET program; Table 1-2b shows enrollment trends for CWU for the last 5 years.

Table 1-1 History of Admissions Standards for Freshmen Admissions for Past Five Years

Academic Year	Composite ACT		Composite SAT		Percentile Rank in High School		Number of New Students Enrolled
	MIN.	AVG.	MIN.	AVG.	MIN.	AVG.	
2013-14	11	20	460	984	NA	NA	1,622
2012-13	11	20	530	995	NA	NA	1,511
2011-12	11	21	530	1000	NA	NA	1,463
2010-11	13	21	510	995	NA	NA	1,752
2009-10	11	20	530	997	NA	NA	1,751

Notes:

The minimum and average ACT and SAT scores were determined from all admitted and enrolled "first year" students across an academic year starting fall term and ending summer term.

CWU does not collect admitted students high school percentile rank information.

Table 1-2a. Enrollment Trends for Past Five Academic Years – EET Majors Only

	2009-10	2010-11	2011-12	2012-13	2013-14
Full-time Students	40	46	50	47	51
Part-time Students	9	11	16	18	20
Student FTE[1]*	0.89	0.91	0.88	0.85	0.89
BSEET Graduates	6	14	13	14	14

[1] FTE = Full-Time Equivalent *Annual Average of Fall, Winter, and Spring Quarters

Notes:

To determine "Annual Average of Fall, Winter, and Spring Quarters", I calculated the average FTE for each EET or EETP declared major student using the number of enrolled terms based on 10th day attendance data and then averaged all of the student's average FTE to calculate :Student FTE".

Each student's average FTE was used to determine "Full-time" (>= 0.8) or "Part-time" (< 0.8) with 0.8 FTE indicating 10 undergraduate credits.

A distinct count of students earning a Bachelor's degree associated with an EET or EETP major plan during the academic year starting in fall and ending in summer was used to determine the count of "BSEET Graduates".

Table 1-2b. Enrollment Trends for Past Five Academic Years – CWU Total

	2009-10	2010-11	2011-12	2012-13	2013-14
Full-time Students	9,549	9,910	9,821	9,553	9,307
Part-time Students	1,373	1,336	1,429	1,583	1,663
Student FTE[1*]	0.94	0.94	0.93	0.92	0.92
Graduates	2,396	2,380	2,449	2,590	2,439

[1] FTE = Full-Time Equivalent *Annual Average of Fall, Winter, and Spring Quarters

Notes:

To determine "Annual Average of Fall, Winter, and Spring Quarters", I calculated the average FTE for each **undergraduate degree-seeking** student based on the number of enrolled terms based on 10th day attendance and then averaged all of the student's average FTE to calculate "Student FTE".

Each student's average FTE was used to determine "Full-time" (>= 0.8) or "Part-time" (< 0.8) with 0.8 FTE indicating 10 undergraduate credits.

A distinct count of students earning a Bachelor's degree during the academic year starting Fall term and ending Summer term was used to determine the count of "Graduates" was based on IPEDS reporting for that same time period.

B. Evaluating Student Performance

Students are graded on their performance related to the course objectives stated on the syllabi and evaluated by the instructor. In most cases this will include the evaluation of examinations, laboratory work, homework, attendance, and participation.

Grades for courses in the EET program assess individual student performance relative to course objectives and outcomes, which in turn address the program objectives and outcomes as set forth by the industrial advisory committee and ABET accreditation requirements.

C. Transfer Students and Transfer Courses

Transfer students generally arrive from one of the 27 community colleges within the State of Washington. Working agreements have been established between each of the six state universities, including CWU, and the community colleges regarding transfer credits. If a student completes the Direct Transfer Agreement (DTA) degree at a community college they will automatically meet the general education requirements at CWU. Information about acceptable DTA degrees and specific course equivalencies is available on the registrar's website (http://www.cwu.edu/registrar/2014-2015-transfer-equivalencies , accessed Apr 23, 2015). Many students choose to do so due to the lower cost of tuition at community colleges compared to the four-year universities. Since only a small fraction of the courses offered at

these community colleges transfer directly to EET courses most transfer students complete these courses at Central Washington University.

Table 1-3 shows the number of transfer students from state institutions into the EET program and into the university as a whole.

Table 1-3. Transfer Students for Past Five Academic Years

Academic Year	Number of Transfer Students Enrolled	
	EET Program Only	CWU Total
2013-14	2	2,116
2012-13	4	2,174
2011-12	4	2,169
2010-11	3	2,183
2009-10	4	2,124

Notes:

The numbers of Transfer students were determined from all admitted and enrolled transfer students across an academic year starting Fall term and ending Summer term. Any transfer student who was a declared EET or EETP major was included in the year they were admitted.

Transfer students with DTA degrees or who have 90 acceptable credits are granted junior standing within Central. The Admissions Office makes the determination pertaining to the acceptance of general education credits, per the agreement with each community college or four-year institution. Because of the large number of external transfers into the Engineering Technology Unit there is a disproportionate number of students listed as juniors and seniors. Even though these students have advanced standing at CWU they usually take from two to three years to complete the major requirements for the EET program. The length of time to graduation is usually determined by the students' mathematics and physics background.

Transfer credits for courses offered within the ETSC Department (EET, IET, or MET prefix) are accepted from other accredited two-year or four-year institutions through a course-by-course evaluation process. Students transferring credits are required to present the EET coordinator, through their faculty advisor, materials that demonstrate the equivalency of the course. The materials accepted include course syllabi, the textbook used for the course if listed in the syllabi, and work samples. The course is then evaluated using the EET transfer policy, which is available on the CWU website at:

http://www.cwu.edu/engineering/sites/cts.cwu.edu.engineering/files/Transfer%20Policy.pdf

If the course meets the standards outlined in the transfer policy, then the program coordinator instructs the registrar's office to substitute the specific transfer course for the program requirement. These substitutions must be approved by the ETSC chair before the substitution is granted.

D. Advising and Career Guidance

The ETSC department expects that all faculty will be involved in advising of students in the major program or unit in which they are assigned to teach. Likewise, the students are expected to see their faculty advisor on a regular basis. When a student first declares an EET major, the EET advisor or program coordinator in Ellensburg or Des Moines will review the student's academic progress toward graduation using the Academic Requirements Report available through the MyCWU interface. An example appears in Table 1-4 below. The advisor will work with the student to develop a schedule of courses using an EET Advising Sheet that follows the four year plan located at:

http://www.cwu.edu/engineering/sites/cts.cwu.edu.engineering/files/EET%20Four%20Year%20Plan.pdf

Table 1-4 provides an Example EET Advising Sheet. Table 1-5 shows the Academic Requirements Report example for the same student. These tools are used by both the student and the advisor to guide the student through the program completion process and to help the student meet his or hers personal and educational objectives. The student's schedule is updated as changes in course scheduling or the student's objectives require.

Table 1-4. Example EET Advising Worksheet

CR	CR		EET Program 2013 and on	Prior	SUM	F14	W15	SP15	SUM	F15	W16	SP15	SUM
4	4	CS 110	Programming Fundamentals I	4									
4	5	EET 221	Basic Electricity	4									
4	5	EET 312	Basic Electronics	4									
4	4	EET 314	Network Analysis	4									
4	4	EET 323	Active Linear Circuits	4									
4	4	EET 324	Advanced Electrical Networks	4									
4	4	EET 370	Programming Applications in Technology			4							
4	4	EET 371	Digital Circuits	4									
4	4	EET 372	Advanced Digital Circuits	4									
4	4	EET 375	Microprocessor Applications			4							
4	4	EET 376	Microprocessors and Instrumentation				4						
4	4	EET 452	Computer Networks				4						
4	4	IET 301	Engineering Project Cost Analysis		4								
4	4	IET 380	Quality Control					4					
4	4	IET 455	Engineering Project Management		4								
5	5	MATH 172	Calculus I	5									
5	5	MATH 173	Calculus II	5									
3	5	MATH	Elective: MATH 260, MATH 265, MATH 272, MATH 311, MATH 330, or MATH 376	5									
5	5	PHYSICS	Phys 111, 111LAB, or 181, 181LAB			5							
5	5		Phys 112, 112LAB or 182, 182LAB, or CHEM 181, 181Lab	5									
5	5		Phys 113, 113LAB or PHYS 183, 183LAB					5					
3	5	WRITING	ADMG 385, CS 325, or ENG 310	5									
3	4	SPEECH	IET 389, COM 345, COM 207										
90	97	Core Total	95	57	8	13	8	9	0	0	0	0	0

			Elective Sequence (Select 2 of 3 sequences)												
4	4	CS 111	Programming Fundamentals II												
4	4	CS 301	Data Structures												
4	4	CS 302	Advanced Data Structures and File Processing												
			or												
4	4	IET 242	Instrumentation			4									
4	4	EET 343	Process Control				4								
4	4	IET 373	PLC Applications	4											
			or												
4	4	IET 160	Computer-aided Design and Drafting		4										
4	4	EET 332	Generation of Electrical Power				4								
4	4	EET 432	Transmission and Distribution of Electrical Power					4							
126	133	Total	24	4	4	4	8	4	0	0	0	0	0		
			Capstone Sequence (Choose Senior Project or Internship)												
2	2	EET 478	Senior Project I			2									
2	2	EET 479	Senior Project II				2								
2	2	EET 489	Senior Technical Presentations					2							
			or												
6	6	EET 490	Cooperative Education												
158	165	Total	6	0	0	2	2	2	0	0	0	0	0		

Table 1-5. Example Academic Requirements report

Academic Requirements Report — Prepared on 04/22/2015
For — Requested by Nathan Davis

Academic Requirements Report	Requirement Term	Requirement Status
Undergraduate Career	Fall 2013	Satisfied
Electronics Engineer Tech (BS) Major	Winter 2014	Satisfied

DISCLAIMER
NOTICE: THIS IS NOT AN OFFICIAL DOCUMENT. It is unlawful to transmit this document to a third party. CAPS is designed to help monitor your academic progress at CWU. Efforts have been made to ensure accuracy, however final responsibility resides with you. Registrar Services certifies successful completion of degree requirements.

GRADUATION FILING NOTICE
NOTICE: An application for degree must be submitted through MyCWU no later than the second Friday of the quarter before your expected degree completion term. Example: if you plan to graduate spring quarter, your application is due the second Friday at the beginning of winter quarter. Deadline dates are posted in the registration handbook. To apply navigate from MyCWU Student Center > Academic > Other Academic > Apply for Graduation.

STUDENT EXCEPTION DISCLAIMER
NOTICE: All degree requirements, transcripts from other institutions and substitution paperwork must be completed and received by the last day of the quarter in which you plan to receive your degree.

UNDERGRAD DEGREE REQUIREMENTS
Satisfied: UNDERGRADUATE DEGREE REQUIREMENTS (RG-0051)

DEGREE UNITS
Satisfied: DEGREE UNITS - 180 Units Minimum Required (The total reported below includes all CURRENTLY ENROLLED CWU courses, graded CWU courses, repeated courses, and transfer units that may apply toward the 180 unit minimum. Incomplete courses are NOT calculated in the total. Only 105 units from the two-year institutions and 135 units from a combination of two-year and four-year institutions will apply to the 180 unit requirement.) (R-1298)

Units: 180.00 required, 180.00 used

UPPER DIVISION UNITS
Satisfied: UPPER DIVISION UNITS - 60 Minimum Required (R-0114)

Upper Division Units
Satisfied: ** Upper Division Units - 60 Minimum Required

Units: 60.00 required, 86.00 used

CWU RESIDENCY UNITS
Satisfied: RESIDENCY UNITS (R-0279)

CWU Residency Units
Satisfied: ** CWU Residency Units - 45 Minimum Required

Units: 45.00 required, 109.00 used

GPA REQUIREMENTS
Satisfied: GPA REQUIREMENTS (R-0003)

CWU Cumulative GPA
Satisfied: ** CWU Cumulative GPA - 2.00 Minimum Required

GPA: 2.000 required, 3.654 completed

Page 1 of 6

CWU/Transfer Combined Cumulative GPA
Satisfied: ** CWU/Transfer Combined Cumulative GPA

GPA: 2.000 required, 3.169 completed

GENERAL EDUCATION
Satisfied: GENERAL EDUCATION - 18 Courses Required OR a transferable Associate degree will satisfy General Education (RG-0052)

Satisfied: Dynamic Condition Equal ASSOC OF ARTS DEG-TRNS

GENERAL ELECTIVES
UNDERGRADUATE GENERAL ELECTIVE COURSES (RG-0205)

GENERAL ELEC
These courses have not been used to meet requirements, but they calculate towards GPAs and count towards total units. (R-0177)

Courses Not Used
Satisfied: ** General Elective Courses

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	BIOL	LD	BIOL Lower Division	C-	5.00	TR
Fall 2013	BIOL	LD	BIOL Lower Division	C+	4.00	TR
Fall 2013	BIOL	110	Basic Biology	A	5.00	TR
Fall 2013	BIOL	322	Introductory Microbiology	A-	5.00	TR
Fall 2013	CHEM	111	Introduction to Chemistry	C+	4.00	TR
Fall 2013	CHEM	111LAB	Chemistry Laboratory	B	1.00	TR
Fall 2013	CHEM	182	General Chemistry II	C+	4.00	TR
Fall 2013	CHEM	182LAB	General Chemistry Lab II	C+	1.00	TR
Fall 2013	COM	250	Pub Spk:Pract/Cri	B+	1.00	TR
Fall 2013	CS	LD	CS Lower Division	A-	5.00	TR
Fall 2013	CS	LD	CS Lower Division	A	4.00	TR
Fall 2013	CS	LD	CS Lower Division	B+	4.00	TR
Fall 2013	CS	LD	CS Lower Division	B-	3.00	TR
Fall 2013	CS	105	The Logical Basis of Computing	B	4.00	TR
Fall 2013	CS	311	Computer Architecture I	D	3.00	TR
Fall 2013	ENG	101	Comp I: Critical Read/Respond	B	5.00	TR
Fall 2013	ENG	102	Composition II: Reason/Res	B+	5.00	TR
Fall 2013	ENG	105	Lit Imagination: Intro Lit	A-	5.00	TR
Fall 2013	GE	NS-B	BR: NS - B	B+	4.00	TR
Fall 2013	GE	REAS	BS - REAS	B-	3.00	TR
Fall 2013	GEOL	101	Physical Geology	A-	4.00	TR
Fall 2013	GEOL	101LAB	Physical Geology Laboratory	A-	1.00	TR
Fall 2013	HIST	144	US Hist Since 1865	A-	5.00	TR
Fall 2013	MATH	153	Pre-Calculus Mathematics I	B	5.00	TR
Fall 2013	MATH	153	Pre-Calculus Mathematics I	C+	5.00	TR
Fall 2013	PE	LD	PE Lower Division	A	2.00	TR
Fall 2013	PE	LD	PE Lower Division	S	1.00	TR
Fall 2013	PEID	138	Karate	A	1.00	TR
Fall 2013	PHIL	LD	PHIL Lower Division	B	3.00	TR
Fall 2013	PHIL	201	Introduction to Logic	A	3.00	TR
Fall 2013	PSY	101	General Psychology	A-	5.00	TR
Fall 2013	PSY	205	Psychology of Adjustment	B	5.00	TR
Fall 2013	SOC	101	Social Problems	B	5.00	TR
Fall 2013	SPAN	151	First Year Spanish	C+	5.00	TR
Fall 2013	ENG	310	Technical Writing	A	1.00	EN

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Win 2014	MATH	265	Linear Algebra I	C	1.00	EN

EET BS
Satisfied: IET: ELECTRONICS ENGINEERING TECHNOLOGY B.S. - 134 Units Required (RG-0314)

EET CORE LD
Satisfied: ELECTRONICS ENGINEERING TECHNOLOGY CORE LOWER DIVISION - 18 Units Required (R-1139)

EET 221
Satisfied: ** EET 221 - 4 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	EET	221	Basic Electricity	A	4.00	EN

CS 110
Satisfied: ** CS 110 - 4 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	CS	LD	CS Lower Division	A-	4.00	TR

CS LD has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

MATH 172/173
Satisfied: ** MATH 172/173 - 10 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	MATH	172	Calculus I	C	5.00	TR
Fall 2013	MATH	173	Calculus II	A	5.00	EN

EET UD
Satisfied: ELECTRONICS ENGINEERING TECHNOLOGY UPPER DIVISION - 52 Units Required (R-1140)

EET 312/313
Satisfied: ** EET 312/313 - 8 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Win 2014	EET	312	Basic Electronics	B-	4.00	EN
Win 2014	EET	313	Electrical Networks	A-	4.00	EN

EET 323/324/370
Satisfied: ** EET 323/324/370 - 12 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Spr 2014	EET	323	Active Linear Circuits	A-	4.00	EN
Spr 2014	EET	324	Advanced Electrical Network	A	4.00	EN
Fall 2014	EET	370	Programming Apps in Tech	A	4.00	EN

EET 371/372/375/376
Satisfied: ** EET 371/372/375/376 - 16 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Win 2014	EET	371	Digital Circuits	A	4.00	EN
Spr 2014	EET	372	Advanced Digital Circuits	A-	4.00	EN
Fall 2014	EET	375	Microprocessor Applications	A-	4.00	EN
Win 2015	EET	376	Microprocess/Inst	A	4.00	EN

EET 452
Satisfied: ** EET 452 - 4 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Spr 2015	EET	452	Computer Networks		4.00	IP

IET 301/380/455
Satisfied: ** IET 301/380/455 - 12 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Sum 2014	IET	301	Engin Proj Cost Analysis	A	4.00	EN
Win 2015	IET	455	Engineering Project Management	B+	4.00	EN
Spr 2015	IET	380	Quality Control		4.00	IP

ELECTIVES SEQUENCE
Satisfied: ELECTIVES SEQUENCE - 24 Units Required - Choose 2 of 3 (R-2344)

IET 242/343/445
Satisfied: **IET 242/343/445 - 12 units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2014	IET	242	Instrumentation	B	4.00	EN
Spr 2014	IET	373	Plc Applications	A	4.00	EN
Sum 2014	EET	477	Robotics	A	4.00	EN

IET 373 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

EET 477 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

IET 160/EET 332/432
Satisfied: **IET 160/EET 332/432 - 12 units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Win 2015	EET	332	Generation of Electrical Power	A	4.00	EN
Spr 2015	EET	432	Transmission & Dist Elec Pwr		4.00	IP
Win 2015	IET	265	Three-Dimensional Modeling	B+	4.00	EN

IET 265 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

CAPSTONE SEQ
Satisfied: CAPSTONE SEQUENCE - (Choose 1) - 6 Units Required (R-2345)

EET 478/479/489 IET 490
Satisfied: **EET 478/479/489 IET 490 - 6 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2014	EET	478	Senior Project I	A	2.00	EN
Win 2015	EET	479	Senior Project II	A	2.00	EN
Spr 2015	EET	489	Senior Technical Presentations		2.00	IP

MATH ELEC
Satisfied: MATH ELECTIVES - 3-5 Units Required (R-1133)

MATH Electives
Satisfied: ** MATH 260/265/272/311/330/376 - 3-5 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Win 2014	MATH	265	Linear Algebra I	C	3.00	EN

PHYS DES LD (2009)
Satisfied: PHYSICS DESIGNATED LOWER DIVISION - 15 Units Required (Select 1 of 2 options) (R-0718)

PHYS 181/181LAB/182/182LAB+
Satisfied: ** PHYS 181/181LAB/182/182LAB/183/183LAB - 0-15 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2014	PHYS	181	General Physics	B+	4.00	EN
Fall 2014	PHYS	181LAB	General Physics Laboratory	B+	1.00	EN
Spr 2015	PHYS	183	General Physics III		4.00	IP
Spr 2015	PHYS	183LAB	General Physics Lab III		1.00	IP
Fall 2013	CHEM	181	General Chemistry I	C+	4.00	TR
Fall 2013	CHEM	181LAB	Gen Chemistry Lab I	C+	1.00	TR

CHEM 181 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

CHEM 181LAB has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

EET WRT/COM ELEC
Satisfied: WRITTEN COMMUNICATION ELECTIVE - 3-5 Units Required (R-1141)

ADMG 385/CS 325/ENG 310
Satisfied: ** ADMG 385 or CS 325 or ENG 310 - 3-5 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	ENG	310	Technical Writing	A	3.00	EN

SPEECH ELEC
Satisfied: SPEECH ELECTIVE - 3-4 Units Required (R-2106)

SPEECH elective
Satisfied: ** IET 389/COM 207/COM 345 - 3-4 Units Required

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	COM	250	Pub Spk:Pract/Cri	B+	4.00	TR

COM 250 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

EET ELECTIVES
Satisfied: EET ELECTIVES - 5-10 Units Required - Department Approved (R-2343)

ELECTIVES
Satisfied: **ELECTIVES - 5-10 Units Required - Department Approved

Courses Used

Term	Subject	Catalog Nbr	Course Title	Grade	Units	Type
Fall 2013	CS	LD	CS Lower Division	A-	1.00	TR
Fall 2013	CS	LD	CS Lower Division	B	4.00	TR
Fall 2013	CS	111	Programming Fundamentals II	C-	4.00	TR

CS LD has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

CS LD has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

CS 111 has been directed to this line.
CD: USE DEPT APPR
Entered by: SHEERANJ

EET ADDL (2001)
Satisfied: ELECTRONICS ENGINEERING TECHNOLOGY VERIFICATION OF GPA AND RESIDENCY REQUIREMENTS (R-1145)

EET GPA
Satisfied: ** Electronics Engineering Technology GPA - 2.25 Required

GPA: 2.250 required, 3.434 completed

EET Res
Satisfied: ** Electronics Engineering Technology Residency - 10 Units Required

Throughout the year employers send employment and internship inquiries directly to the department or to career services who then inform the department. Their information is forwarded to the appropriate faculty members. These inquiries are then posted on bulletin boards within the department and mentioned to the appropriate students. EET related job postings are on bulletin boards in Hogue Hall rooms 101 and 105.

In addition, CWU provides two career recruiting events for students. The fall ETSC Career Fair ((http://www.cwu.edu/career/ETSCFair2014) is generally held in November and attracted approximately 50 companies this past year. The spring career fair is generally held in April and is a general career fair for CWU spring graduates.

Students who are active in the IEEE chapter may also attend student professional development conferences and regional meetings throughout the year. Through these activities students gain an introduction to working with the professional groups. An understanding of the value of service to the professional community, and networking experience with working professionals including exposure to the various professions they represent.

E. Work in Lieu of Courses

The EET program allows up to 4 credits of Cooperative Education (IET 490) in lieu of part of the Senior Capstone Sequence (EET 478 and EET 479). To have an internship apply as cooperative education, the student must present the major professor with a proposal that includes a summary of the position and the responsibilities that accompany it. If, after review, the professor finds that the position meets the requirements of the program, a Cooperative Learning Agreement is developed with learning objectives aligned to those of the senior capstone sequence. There is no other option offered for credit for work in lieu of courses.

F. Graduation Requirements

Graduates of the EET program at CWU earn a Bachelor's of Science in Electronics Engineering Technology degree. In order to graduate, CWU requires graduates to have a cumulative GPA of at least 2.0, with a minimum GPA of 2.25 for courses within the major. At minimum of 180 credits are required for graduation, with at least 60 credits of upper level course work (300 and 400 level). There is also a minimum requirement of at least 3 quarters of study at CWU, resulting in 45 credits taken at CWU.

The general education sequence requires approximately 90 quarter credits. The EET program (core plus electives) adds 134 credits for a total of 224. Due to the potential overlap between some courses in General Education (Basic math, computer science, Physics and Chemistry), it is possible to graduate having completed 214 quarter credits. For further information, see the CWU online catalog at:

http://catalog.acalog.cwu.edu/preview_program.php?catoid=44&poid=10082

Note:

The online catalog reflects changes effective Fall 2015.

G. Transcripts of Recent Graduates

Transcripts will be provided upon request. The EET program no longer has options with separate graduation requirements.

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement

CWU Vision Statement - 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.

Accessed at http://www.cwu.edu/welcome/vision-central-washington-university

CWU Mission - The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.

Qualified faculty and staff create a community that encourages and supports the emotional, personal, and professional growth of students from a variety of backgrounds. The university works with community colleges to establish centers throughout the state and employs technology to extend the reach of its educational programs.

The university community values teaching as the vehicle to inspire intellectual depth and breadth, to encourage lifelong learning, and to enhance the opportunities of its students. The faculty develop and strengthen bachelor's and master's degree programs in the arts, sciences, and humanities; in teacher education; in business; in the social services; and in technological specializations. A strong liberal arts foundation; applied emphases; opportunities for undergraduate research, creative expression, and international study; and close working relationships between students and faculty are hallmarks of the undergraduate experience. Graduate programs develop partnerships between faculty and students to extend scholarship to important areas of research and practice.

Accessed at http://www.cwu.edu/welcome/mission

CWU Core Values - Central Washington University exists to advance society through the

essential activities of teaching, discovery, and service. While no one of these core elements is meaningful in isolation from the others, CWU finds it necessary to prioritize its efforts in relation to its mission, vision, values, goals, and resources. In order to maximize the value of each of the elements of its mission, CWU emphasizes the integration of scholarship, teaching, and public service.

As a public comprehensive university, CWU strives to create an engaging learning environment and therefore places its highest priority on teaching, learning, and student success. The faculty is comprised of scholar-teachers working in the interests of their students, their disciplines, and the region. CWU encourages individualized programs of student success and promotes undergraduate and graduate student-faculty partnerships that are actively engaged in discovery, creative expression, and engaged learning.

As a community dedicated to the principles of academic freedom, CWU must be an environment that promotes reasoned, civil, and enlightened discourse and creative expression without fear of reprisal, ridicule, or exclusion. CWU's educational environment must empower each person with the freedom to explore, to evaluate, and to learn.

CWU must also strive to serve its region by addressing pressing economic and social issues. As a comprehensive university, CWU must use its intellectual capacity not only to contribute to disciplinary literatures, but also to assist area business, social, and government leaders in strengthening and diversifying the area's economic base, to help create a sustainable natural environment, and to address critical social issues.

CWU is also a place where people gather to live and to work. It must therefore be a place that enables people to grow and to prosper. In keeping with the academic values of shared governance and reasoned dialog, the university must be open, transparent, and empowering.

It follows, then, that CWU is committed to the following shared values:

Student success: CWU believes that student success is best achieved by providing supportive learning and living environments that encourage intellectual inquiry, exploration, and application. CWU believes that learning is best achieved in small classroom or group settings with ample opportunities for individualized instruction, mentoring, advising, and programming.

Access: CWU believes in providing educational opportunities to as many qualified students as possible. CWU believes that restrictions of place, time, and finances can be overcome through the effective use of partnership with community colleges and by effective and efficient use of learning, communication, and social technologies.

Engagement: CWU believes that learning, research, and creative expression are enhanced by engagement with external partners. CWU believes that as a publicly-funded institution, it has a responsibility to help address the social and economic challenges faced by our communities.

Inclusiveness: CWU believes that diversity of peoples, cultures, and ideas is essential to

learning, discovery, and creative expression. CWU believes that all faculty, staff, and students must be and must feel physically, professionally, and emotionally safe in order to fully engage in and benefit from the university experience.

Shared governance: CWU believes that shared governance is most effective when information systems and decision-making processes are both robust and transparent. CWU believes that communication channels should be open and two-way and that faculty, staff, and students should be empowered to participate in the governance systems.

Facilities: CWU believes that state-of-the-art, safe, and attractive facilities enhance the working and learning environments of faculty, staff, and students. CWU also believes that state-of-the-art technologies provide leverage for the efforts of faculty, staff, and students.
Safety: CWU believes it has a responsibility to providing a working and learning environment that is both physically and emotionally safe. CWU believes this responsibility extends to the off-campus environment of its full-time, residential students.

Accessed at http://www.cwu.edu/welcome/core-values

CEPS Mission, Core Themes and Outcomes

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.

College of Education and Professional Studies (CEPS) Core Themes and Outcomes

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.

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.

SCHOLARSHIP AND CREATIVE EXPRESSION
- Students and faculty participation in scholarship and/or creative expression activities
- Obtain grant and private donation funding.
- Provide and/or maintain hardware and software technologies.

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.

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.

Accessed at http://www.cwu.edu/education-professional-studies/mission-core-themes-and-outcomes

ETSC Department 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.
The Engineering Technologies, Safety, and Construction (ETSC) offers Bachelor of Science degree programs in selected industrial and engineering technologies. The department envisions itself as providing an educational service with customers at both ends of the system: students wanting an education leading toward employment, and industry desiring employees to lead them into the future. The programs are based on a foundation of technical courses, math and science, communications, and liberal arts. All of the programs work with industrial advisory committees to ensure that they stay current and meet accreditation guidelines. The ETSC department also offers a Master of Science in Engineering Technology (MSET) Degree.

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 TAC/ABET accreditation for EET and MET
   - Maintain ACCE accreditation for CM
   - Maintain Washington State PESB accreditation for Technology Education
   - Obtain accreditation for SHM from ABET/ ASAC by 2016
   - Obtain Association of Technology, Management, and Applied Engineering (ATMAE) accreditation for Master of Science in Engineering Technology (MSET) and Industrial Technology (InT) programs 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 5 yrs
   - Offer Bachelor of Science in EET and other appropriate IET degrees at selected CWU Centers
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 develop 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 programs 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 by Academic Year 2012/13
   - 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

Accessed at http://www.cwu.edu/engineering/about

B. Program Educational Objectives

The Program Educational Objectives for the EET program state that:

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 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.

The program educational objectives are available online at:
http://www.cwu.edu/engineering/eet-program-educational-objectives.

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

Table 2-1 shows the correlation between the Program Educational Objectives with the related outcomes of the College of Education and Professional Studies (CEPS) and the Mission of the university.

Table 2-1: Correlation between Program Educational Objectives and the mission of CEPS and the University

EET Program Educational Objective	Related Department Goal	Related CEPS **Mission and** Outcome**s**	Related University Goal
Objective 1: CWU EET program graduates will be prepared for careers or educational opportunities of their choice.	Goal 1: To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation	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. Scholarship and Creative Expression Provide and/or maintain hardware and software technologies. Resource Development and Stewardship: Upgrade and/or add onto buildings and facilities	CWU Mission: The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.
Objective 2: CWU EET program graduates will be able to communicate with their desired constituencies.	Goal 1: To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation Goal 9: Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility.	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. Scholarship and Creative Expression Students and faculty participation in scholarship and/or creative expression activities	CWU Mission: The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.

Objective 3: CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.	Goal 1: To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation Goal 9: Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility. Goal 10: Promote lifelong learning for students, faculty and staff.	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. Public Service and Community Engagement Increase participation in university sponsored life-long learning opportunities	CWU Mission: The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.
Objective 4: CWU EET program graduates will participate in professional community organizations	Goal 1: To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation Goal 9: Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility. Goal 10: Promote lifelong learning for students, faculty and staff.	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. Public Service and Community Engagement Increase participation in university sponsored life-long learning opportunities Scholarship and Creative Expression Students and faculty participation in scholarship and/or creative expression activities	CWU Mission: The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.

Objective 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: To nurture excellent programs in Technology, and Engineering Technology related disciplines by maintaining or obtaining national accreditation Goal 9: Value diversity of background, experience, beliefs, and perspectives as a means to improve the quality of the educational experience and to achieve civility. Goal 10: Promote lifelong learning for students, faculty and staff.	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. Public Service and Community Engagement Increase participation in university sponsored life-long learning opportunities Scholarship and Creative Expression Students and faculty participation in scholarship and/or creative expression activities	CWU Mission: The mission of Central Washington University is to prepare students for enlightened, responsible, and productive lives; to produce research, scholarship, and creative expression in the public interest; and to serve as a resource to the region and the state through effective stewardship of university resources.

D. Program Constituencies

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

- Current students of the program
- Recent graduates of the program
- Employers who hire from the program
- Members of the Industrial Advisory Committee
- Faculty and administration of the University

E. Process for Review of the Program Educational Objectives

The continuous improvement process for the EET program requires that the industrial advisory board (IAC) review the program educational objectives and educational objective metric data on a three year rotating cycle. Upon review, the IAC will make recommendations or request additional documentation if a concern is expressed. The process for review of the Program Educational Objectives for the EET Program is described in Criterion 4, where a detailed description of this process and specific program review schedules are provided.

The extent to which the various stakeholders participate is varied. Enrolled students are generally not as interactive with regard to program 'objectives'. Alumni are continuously providing feedback on objectives, generally through surveys. Faculty members are constantly addressing aspects of program objectives. Alumni may also participate both through the program IAC. This particular input is intended to reflect the interests of industry and related companies. CWU administration has its own program oversight protocol, and directly comments on all related program issues. CWU oversight is intended to reflect the needs of the university, Washington State and its citizens.

CRITERION 3. STUDENT OUTCOMES

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

The EET Student Outcomes have been developed by the faculty with guidance from the stated missions, goals, objectives, and outcomes of the university, college, department, EET industrial advisory committee, accreditation requirements, alumni and employer feedback.

The EET student outcomes are reviewed annually and input is solicited from stakeholders of the program including the industrial advisory committee, faculty, and alumni. Modifications to the EET outcomes are the responsibility of the program coordinator. The review schedule for program outcomes is included in table 4a in criterion 4.

B. Student Outcomes

The ABET 2015 – 2016 Criteria for Accrediting Engineering Technology Programs, Criterion 3 states that

> "The program must have documented student outcomes that prepare graduates to attain the program educational objectives. There must be a documented and effective process for the periodic review and revision of these student outcomes.
>
> B. For baccalaureate degree programs, these student outcomes must include, but are not limited to, the following learned capabilities:
>
> a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
>
> b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
>
> c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
>
> d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
>
> e. an ability to function effectively as a member or leader on a technical team;
>
> f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;
>
> g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical

literature;

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

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

j. a knowledge of the impact of engineering technology solutions in a societal and global context; and

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

The ABET 2015 – 2016 Program criteria for Electrical/Electronic(s) Engineering Technology and similarly named programs states that:

Lead Society: Institute of Electrical and Electronics Engineers

Applicability

These program criteria apply to engineering technology programs that include electrical or electronic(s) or similar modifiers in their titles.

Objective

An accreditable program in Electrical/Electronic(s) Engineering Technology will prepare graduates with the technical and managerial skills necessary to enter careers in the design, application, installation, manufacturing, operation and/or maintenance of electrical/electronic(s) systems. Graduates of associate degree programs typically have strengths in the building, testing, operation, and maintenance of existing electrical systems, whereas baccalaureate degree graduates are well prepared for development and implementation of electrical/electronic(s) systems.

Outcomes

Graduates of associate degree programs must demonstrate knowledge and hands-on competence appropriate to the goals of the program in:

a. the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.

b. the applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.

Given the breadth of technical expertise involved with electrical systems, and the unique objectives of individual programs, some baccalaureate programs may focus on preparing graduates with in-depth but narrow expertise, while other programs may choose to prepare graduates with expertise in a broad spectrum of the field. Therefore, the depth and breadth of expertise demonstrated by baccalaureate graduates must be appropriate to support the goals of the program. In addition to the outcomes expected of associate degree graduates, graduates of baccalaureate degree programs must demonstrate:

c. the ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems.

d. the ability to apply project management techniques to electrical/electronic(s) systems.

e. the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems.

Per the requirements of the program criteria and the technical specializations of the EET faculty, the program emphasis is placed upon the analysis, design, and implementation of instrumentations systems and power systems. For this reason, control systems, communication systems and computer systems are not specifically emphasized or assessed in favor of these areas.

Outcomes are documented online at: http://www.cwu.edu/engineering/eet-student-outcomes with EET program goals and objectives documented on adjacent links.

C. Relationship of Student Outcomes to Program Educational Objectives

The Program Educational Objectives for the EET program state that:

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 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.

As seen in tables 3-1 and 3.2, all of the ABET student outcomes in Criterion 3 and the ABET program criteria are met in the EET program educational program educational objectives

Table 3-1: Relationship of ABET Program Outcomes to Program Educational Outcomes

ABET-ETAC Criteria 3 Each program must demonstrate that graduates have:	CWU EET Educational Objective
a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
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;	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.

e. an ability to function effectively as a member or leader on a technical team;	**Objective 2 -** CWU EET program graduates will be able to communicate with their desired constituencies **Objective 4 -** CWU EET program graduates will participate in professional community organizations.
f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;	**Objective 1 -** CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 3 -** CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;	**Objective 2 -** CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3 -** CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
h. an understanding of the need for and an ability to engage in self-directed continuing professional 4development;	**Objective 3 -** CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest. **Objective 4 -** CWU EET program graduates will participate in professional community organizations. **Objective 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.
i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;	**Objective 4 -** CWU EET program graduates will participate in professional community organizations.
j. a knowledge of the impact of engineering technology solutions in a societal and global context; and	**Objective 4 -** CWU EET program graduates will participate in professional community organizations. **Objective 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.
k. a commitment to quality, timeliness, and continuous improvement.	**Objective 2 -** CWU EET program graduates will be able to communicate with their desired constituencies **Objective 4 -** CWU EET program graduates will participate in professional community organizations.

Table 3-2: Relationship of ABET Outcomes for Program Criteria for Electrical/Electronic(s) Engineering Technology programs to Program Educational Outcomes

The Outcomes described in the Program Criteria for Electrical/Electronic(s) Engineering Technology state that graduates must demonstrate knowledge and hands-on competence appropriate to the goals of the program in:	
a. the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
b. the applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
c. the ability to analyze, design, and implement control systems, instrumentation systems, communications systems, computer systems, or power systems.	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
d. the ability to apply project management techniques to electrical/electronic(s) systems.	**Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.
e. the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems.	**Objective 1** - CWU EET program graduates will be prepared for careers or educational opportunities of their choice. **Objective 2** - CWU EET program graduates will be able to communicate with their desired constituencies **Objective 3** - CWU EET program graduates will be able to continue acquiring skills and expertise in their areas of interest.

CRITERION 4. CONTINUOUS IMPROVEMENT

The faculty of the Electronic Engineering Technology program at CWU, under the direction of the department chair, is responsible for implementing changes in response to the continuous improvement plan. Our constituency, as outlined in Criterion 2, section D, includes current and recent students, employers who hire from the program, members of the Industrial Advisory Committee, as well as faculty and administration of the University. Each of these groups can provide recommendations for improvement which are evaluated by the coordinator and faculty of the program to determine its impact and feasibility.

A. Student Outcomes

Student outcomes are evaluated within the core of the EET program. Each class is aligned with one or more of the student outcomes where it is either Introduced, Reinforced, or Assessed. The outcome introduction and reinforcement steps are used by the course instructor to gauge student understanding and to provide continuity in the curriculum. The assessment step is used to show the degree to which the students in the course have mastered the outcome. Data is only collected and analyzed at the assessment step for Continuous Quality Improvement purposes. Table 4.A.1 shows where each student outcome is introduced, reinforced and assessed within the program.

Student outcome 3.a is assessed in EET 324. The students are asked to determine the Laplace transform of a time domain function using the definition of the Laplace transform. The specific problem from the final exam for the spring 2015 offering of EET 324 is as follows:

Use the definition of the Laplace transform to determine the Laplace transformation of the function shown.

$$f(t) = \frac{4t^2 + 4t + 1}{2t + 1} + 5e^{-2t}$$

The table below shows the historical results for the course. It is noted that the results from the spring 2014 offering are not available because of conversion to an updated online learning system.

EET 324 - 3.a.	Ave	N	0	1	2	3	4
The student will determine the Laplace transforms given time domain functions.			Can not determine Laplace transforms given a table	Can use a Laplace transform pair table to transform time domain functions to the s-domain	Can use a Laplace transform operations table to transform time domain operations to the s-domain.	Can determine Laplace transform pairs using the mathematical definition for a Laplace transform.	Can derive Laplace transform pairs using the Laplace transform operation table.
2008	3.30	10	0	0	3	1	6
2010	4.00	14	0	0	0	0	14
2012	3.25	12	0	0	1	7	4
2014	#####	0	No Data	No Data	No Data	No Data	No Data
2015	3.29	7	1	0	0	1	5

Student outcome 3.b is likewise assessed in EET 324. The following problem was used to assess this student outcome and is from the final exam for the spring 2015 offering.

Determine the inverse Laplace transform of the function shown:

$$F(s) = \frac{15s^2 + 86s + 404}{s^3 + 10s^2 + 82s + 232}$$

The table below shows the historical results for the course. It is noted that the results from the spring 2014 offering are not available because of conversion to an updated online learning system.

EET 324 - 3.b.	Ave	N	0	1	2	3	4
The student will determine the inverse Laplace transforms given s-domain functions.			Can not determine the inverse Laplace transforms given a table	Can determine the inverse Laplace transform of an s-domain function given a table with the function	Can determine the real and complex poles of a first-order s-domain function	Can determine the correct form of a time-domain function given an s-domain function.	Can determine the inverse Laplace transform of an s-domain function.
2008	3.50	10	0	0	1	3	6
2010	3.86	14	0	0	1	0	13
2012	2.50	12	0	0	7	4	1
2014	#####	0	No Data	No Data	No Data	No Data	No Data
2015	3.14	7	1	0	1	0	5

Table 4.A.1: Summary of Student Outcome Alignment to Curriculum		
3.a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;	Introduced:	EET221, EET371
	Reinforced:	EET313, EET372
	Assessed:	**EET324**
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;	Introduced:	IET242
	Reinforced:	EET313
	Assessed:	**EET324**
3.c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;	Introduced:	EET221, EET371
	Reinforced:	EET312, EET372
	Assessed:	**EET323**
3.d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;	Introduced:	EET221
	Reinforced:	EET312
	Assessed:	**EET323**
3.e. an ability to function effectively as a member or leader on a technical team;	Introduced:	EET372
	Reinforced:	EET375
	Assessed:	**EET376**
3.f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;	Introduced:	EET313
	Reinforced:	EET324
	Assessed:	**EET478**
3.g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;	Introduced:	ADMG385, ENG310
	Reinforced:	EET323, EET372
	Assessed:	**EET375**
3.h. an understanding of the need for and an ability to engage in self-directed continuing professional development;	Introduced:	EET375
	Reinforced:	EET376
	Assessed:	**EET452**
3.i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;	Introduced:	IET301
	Reinforced:	EET 478
	Assessed:	**EET 479**
3.j. a knowledge of the impact of engineering technology solutions in a societal and global context; and	Introduced:	EET 375
	Reinforced:	EET 376
	Assessed:	**EET 452**
3.k. a commitment to quality, timeliness, and continuous improvement.	Introduced:	IET 455
	Reinforced:	EET 478
	Assessed:	**EET 479**

Table 4.A.2: Summary of Program Criteria Alignment to Curriculum		
9.a.1. Application of circuit analysis to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	EET 221
	Reinforced:	EET 312
	Assessed:	**EET 324**
9.a.2. Application of circuit design to the building, testing, operation, and maintenance of electrical/ electronic circuits	Introduced:	EET 221
	Reinforced:	EET 312
	Assessed:	**EET 323**
9.a.3. Application of computer programming to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	CS 110
	Reinforced:	EET 370
	Assessed:	**EET 376**
9.a.4. Application of associated software to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	EET221
	Reinforced:	EET312
	Assessed:	**EET323**
9.a.5. Application of analog electronics to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	EET372
	Reinforced:	EET375
	Assessed:	**EET376**
9.a.6. Application of digital electronics to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	EET 221
	Reinforced:	EET 371
	Assessed:	**EET 372**
9.a.7. Application of microcomputers to the building, testing, operation, and maintenance of electrical/ electronic circuits.	Introduced:	EET 371
	Reinforced:	EET 372
	Assessed:	**EET 375**
9.b. Application of physics to electrical/ electronic circuits.	Introduced:	EET 312
	Reinforced:	EET 323
	Assessed:	**EET 342**
9.c. The ability to analyze, design, and implement computer systems.	Introduced:	EET 372
	Reinforced:	EET 375
	Assessed:	**EET 376**
9.d. The ability to apply project management techniques to electrical/ electronic systems.	Introduced:	IET 301
	Reinforced:	IET 455
	Assessed:	**EET 479**
9.e. The ability to utilize transform methods in support of electrical/ electronic systems.	Introduced:	EET221
	Assessed:	**EET 324**

B. Continuous Improvement

The review schedule found in Table 4.B.1 is used to review assessment results and other data associated with each of the student outcomes. The review is performed with faculty of the EET program, the department chair, and the industrial advisory board. This schedule was modified as described in the Background Information section to ensure that all Student Outcomes were reviewed before the Self Study report was submitted.

Table 4.B.1: Schedule for Assessment and Evaluation of Program Outcomes	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
ABET Student Outcomes						
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 non-technical 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.			■			■

In response to the review of the student outcomes and assessment results, the industrial advisory committee recommended the following changes.

- The introduction of a formal transfer policy to stipulate requirements of coursework completed at other institutions used to satisfy requirements of the EET program.
    - The transfer policy was reviewed with the IAC in the spring 2013 and implemented at the beginning of the 2013-2104 academic year. The transfer policy is available online at: http://www.cwu.edu/engineering/sites/cts.cwu.edu.engineering/files/Transfer%20Policy.pdf
- The introduction of an introductory network analysis course (EET 313) to improve the student learning of content related to student outcome 3.b.
    - The proposal to introduce EET 313 was introduced by Taiqian Yang and supported by John Goes in the Fall 2012 IAC meeting. The proposal was reviewed by the faculty and approved by the University's Curriculum Committee in spring 2013. The course was first offered winter quarter 2014.
- The transition of Instrumentation (IET 342) from an upper division to a lower division course to provide an alternate entry point into the program and to provide a "beginning" assessment point for learning outcome 3.c.
    - The faculty initiated proposal to transition Instrumentation from upper division to lower division followed from the request from several community colleges that were seeking articulation agreements with the university. The transition was proposed and approved by the IAC in the Fall 2013 meeting and subsequently approved by the University's Curriculum committee in spring 2014. The course was first offered as IET 242 during the fall quarter of 2014.
- The revision of several rubrics to limit task specific objectives and to focus on tiered learning objectives.
    - The revision of the rubrics is ongoing as the rubric are reviewed with the IAC annually and recommendations are reviewed by the faculty and department chair.

C. Additional Information

The minutes from the Industrial Advisory Committee meetings are included below. These minutes document when the assessment results were reviewed with the IAC. Figures 4.C.1 – 4.C.5 represent the IAC minutes from the last five advisory board meetings.

Figure 4.C.1: Fall 2012 Industrial Advisory Meeting Minutes

9-21-2012
EET Advisory
John Goes, Michoan Spoelstra, Vern Kissner, Nathan Davis, Arthur Morken, Lad Holden-Drop In Eric Yoximer (SP), Chris Springer
Per PowerPoint

1. Introductions-Nate, Michoan, Arthur, Chris Springer, Vern Kissner, John Goes, T.Q. Yang,
2. Specialization-Universities decision to eliminate specialization degrees
3. ABET Program Evaluation-define weakness and concern
   - Active advisory board, need to reinforce the importance of active for accreditation and benefits to students. Continued involvement via phone or video is beneficial.
   - Providing response to ABET concerns by June of next year, putting together report by data Jan-July

   A. ABET report documentation weakness
   - Program lacks documentation demonstrating period review of the program educational objectives by the constituency that it serves
   - The program lacks documentation demonstrating that graduates have: Ability to understand professional, ethical and social responsibilities. A respect of for diversity, and knowledge of contemporary professional, societal, and global issues relating to the discipline. A commitment to quality, timelines, and continuous improvement.
   - Program lacks documentation of demonstrating that the program incorporates relevant data to regularly assess the program educations objectives and outcomes.

   B. Documentation of what each of the three weaknesses need for improvement and strategy to meet those needs.

   C. Concerns-The program's advisory committee representing organizations that employ graduates must be utilized to advise the program in establishing, achieving, and assessing its goals.

The advisory will be looking at ways to assist students, interns, career fair, other.
Career Fair Opportunities-Email chain of companies to build invitation list.

4. Curriculum Review

- ABET accredited BS EET programs.
  Compared
  Western Wash University
  Oregon Institute of Technology

Kansas State University
Devry Inst

- Distinctions:

Depth and Breath or Breath and Depth priorities

CWU serves a wide variety of industries

Two Semester sequence for circuit analysis

Other programs require Elect Com and Digital Signal

Reviewed programs require 2 microprocessor/controllers we have 4

Reviewed programs offer signal Electrical Power Class, CWU had machine and generation in addition to transmission.

Item one, 221 divide dc/ac Nate

Item 221 T.Q. need for more time to cover material and foundation

Item 221-John, split major vs. non major or ac first to cover the wider spectrum of students.

Davis-pedagogical explanation of number systems and reasoning.

Vern, assembly language and need? Relay logic and PLC

Davis move towards a more complete text that would support curriculum base

John-point out other things you will not get to

Davis-steady state from non-Laplace point of view, get further to other content

Vern-EIT prep and immediate testing

Davis-cite recent Met 11/13 pass rate

PE adds credibility to program and faculty, in addition to student success rate.

Develop mentality of taking the test

DSP importance in curriculum-John Goes

Question or comments, see above-

Number of graduates and program size, send updated numbers.

Exit survey-maintain connection for follow-up, employment at time of graduation, social network for contacts, continuation of cwu email, program reach out, looking for continuous relationships and opportunities. Linked In with students to maintain professional contacts, Facebook for social or events.

Mock interviews and skills for develop student opportunities.

Forum-ideas, user groups, easy with relevant content, ideas to expand connections.

Rubric questions, what does it look like, how it used.

Do members want to look at them?

Future info, getting it all together through email discussion

Figure 4.C.2: Spring 2013 Industrial Advisory Meeting Minutes

EET Industry Advisory Council Minutes
Spring 2013
7Jun13

Agenda:

- Review minutes from Fall meeting
- Review curriculum revision
- Present updated ABET requirements
- Present EET transfer policy

Attendance:

- Nathan Davis
- John Goes
- Chris Hobbs
- Lad Holden
- Chris Springer
- Eric Yoxtheimer
- Kevin Bremer*
- Taiqian Yang*

*Both Kevin and Taiqian attempted to participate in IAC via video conference from Des Moines campus, but were unable to connect.

5:00 PM:

- Meeting called to order
- Agenda reviewed
- Reviewed updated curriculum
- Chris Springer: Supported placement of CAD (IET160) as part of power sequence, but concerned that students who do not take power sequence would not have it available.
- Nathan Davis: Indicated that CAD can be used as department approved elective if students do not choose to take power sequence.
- Chris Springer, John Goes: Pointed out that students need to be advised early to ensure that they choose the appropriate path through curriculum. Suggested publishing a curriculum map or career map on the program/department website…Taken under advisement
- Nathan Davis: Proposed substituting IET373 (PLC apps) for EET 445 (Electro-Mechanical Systems) due to course availability…All in favor
- Chris Hobbs: Future of robotics (IET 277, EET477)
- Nathan Davis: IET 277 will be focused for TechEd and IET to provide broad, general interest driven introduction to robotics and will be offered frequently (every fall). EET 477 will be introduce the kinematics and dynamics of articulated robotic systems and will focus primarily on modeling of robotic systems and various algorithms using MATLAB.
- Nathan Davis: Suggested possibility of a future Mechatronics (hybrid of EET and MET) program.
- Presented updated ABET requirements
- Nathan Davis: Outcomes will be developed for the new core of program.

- Nathan Davis: New ABET criteria specifies that outcomes now only are assessed at the final level of proficiency.
- Proposed Transfer Policy
- Chris Springer, John Goes: Proposed revising text of transfer policy as follows:

Under "Core Transfer":

The program advisor has reviewed the learning outcomes of the class from the previous university or institution and has determined that they correspond to the learning outcomes of the corresponding class at Central Washington University.

Under "Elective Transfer":

The program advisor has reviewed the learning outcomes of the class from the previous university or institution and has determined that they correspond to the learning outcomes of the corresponding class at Central Washington University.

- General Discussion
  - John Goes, Eric Yoxtheimer: Requested an introduction to NEC and NFPA be included in the curriculum.
  - Nathan Davis: A brief introduction to NFPA was included in IET 373 offered winter 2012. Might be possible to provide introduction to NEC as well. It might also be possible to include a brief introduction to NEC and NFPA in EET 332.
  - *Lad Holden indicated after the meeting that currently NEC and NFPA is offered within the construction management program and as an alternative, students could consider taking these courses for additional exposure to these standards.
- Meeting adjourned at 6:45 PM

Figure 4.C.3: Fall 2013 Industrial Advisory Meeting Minutes

EET IAC Meeting Notes **13 December 2013, 2pm, Hogue Hall 300N**

Attendees: Nathan Davis, Greg Lyman, John Goes, Chris Springer, Vern Kissner, T.Q. Yang

Note - Next accreditation visit: Summer 2015

1. Review minutes from spring meeting. (on ppt). Approved.
2. Review updated curriculum. (from handout). Approved.

-Discussed robotics curriculum, differences between IET 277 and EET 477

-Discussion regarding moving ENST 310 to general elective list. Consensus to not move.

3. Introduce 2-year curriculum map. (from handout). Approved.

-Nate is going to work on 3-year map

4. Program Criteria and Program Outcomes. (below and handout)

Program Criteria Assessment per Schedule Table. AY 2013-2014

9.A.1. EET 324 – Advanced Electrical Networks

- Discussion of options why the score was higher in 2010. Approved

9.A.4. EET 342 – Instrumentation

- Changing to EET 324 instead of EET 342. Possibly re-word to "general circuit" instead of "first-order". Approved

9.A.7 EET 376 – Microprocessors and Instrumentation

- No year noted on data table on handout. Lad has other data. Approved

9.a.2 EET 375 – Microprocessors

- No year noted on data table on handout. Lad has other data. Approved

9.d. EET 324 – Advanced Electrical Networks

- Approved

Program Outcome Assessment per Schedule Table. AY 2013-2014

3.c. EET 323 – Active Linear Circuits

- Table needs to be updated from rubric. Past courses were lecture only format, with informal labs. Future classes will address this program outcome by including labs. Approved

3.f. EET 375 – Microprocessors

- Approved

3.i EET 489 – Senior Project II

- Approved

Example 4.C.4: Spring 2014 Industrial Advisory Meeting Minutes

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. Approved.
    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

Example 4.C.5: Spring 2015 Industrial Advisory Meeting Minutes

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

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

CRITERION 5. CURRICULUM

A. Program Curriculum

Classes at CWU are on the quarter system. The CWU EET program curriculum is presented in Table 5.1a. The course prerequisite structure is outlined in Figure 5.1c. Table 5.1d shows a schedule for completing the EET program within four years, and displays the starting point for advising students into their individual course of study.

B. Course Syllabi

Course syllabi are summarized and presented in Appendix A for EET core and elective courses.

C. Advisory Committee

Advisory Committees minutes are provided in Examples 4.C.1 through 4.C.5

Table 5-1a Curriculum

Bachelor of Science in Electronics Engineering Technology

Course (Department, Number, Title) List all courses in the program by term starting with first term of the first year and ending with the last term of the final year.	Indicate Whether Course is Required, Elective, or a Selective Elective by an	*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							
UNIV101 – Academic Advising Seminar	R			1		W15, Sp15	
ENG101 – Composition1: Critical Reading	R			4		W15, Sp15	
ENG102 – Composition1: Reasoning	R			4		W15, Sp15	
Math (pre-calculus or calculus)	R	5				W15, Sp15	
Computer Science Elective	R			3		W15, Sp15	
CWU Breadth Requirements							
Arts & Humanities 1				5		W15, Sp15	
Arts & Humanities 2	R			4 or 5		W15, Sp15	
Arts & Humanities 3	R			5		W15, Sp15	
Social & Behavioral Sciences 1	R			5		W15, Sp15	
Social & Behavioral Sciences 2	R			3, 4, or 5		W15, Sp15	
Social & Behavioral Sciences 3	R			4 or 5		W15, Sp15	
The Natural Sciences 1	R	5				W15, Sp15	
The Natural Sciences 2	R	4 or 5				W15, Sp15	
The Natural Sciences 3	R	4 or 5				W15, Sp15	

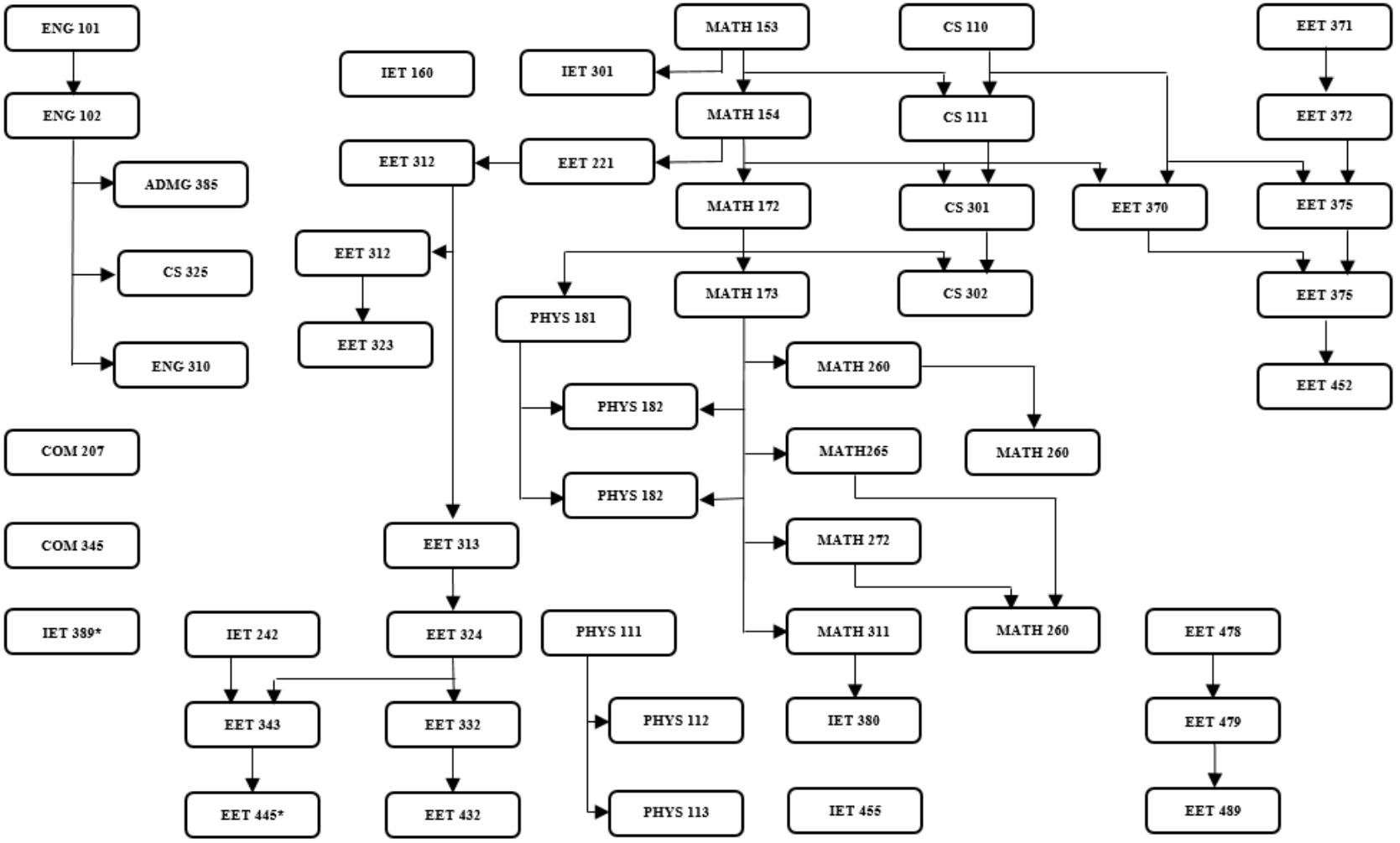
EET Core Requirement							
CS 110: Programming Fundamentals I	R		4			W15, SP15	
CS 111: Programming Fundamentals II	SE		4			W15, SP15	
CS 301: Data Structures	SE		4			F14, SP 15	
CS 302: Advanced Data Structures	SE		4			F14, W15	
EET 221: Basic Electricity	R		4			F14, SP15	
EET 312: Basic Electronics	R		4			W14, W15	
EET 313: Electrical Networks	R		4			W14, W15	
EET 323: Active Linear Circuits	R		4			SP14, SP15	
EET 324: Advanced Electrical Networks	R		4			SP14, SP15	
EET 332: Generation of Electrical Power	SE		4			W14, W15	
EET 343: Process Control	SE		4			W14, W15	
EET 370: Programming Applications in Technology	R		4			F13, F14	
EET 371: Digital Circuits	R		4			W14, W15	
EET 372: Advanced Digital Circuits	R		4			SP14, SP15	
EET 375: Microprocessors	R		4			F13, F14	
EET 376: Microprocessors and Instrumentation	R		4			W14, W15	
EET 432: Transmission and Distribution of Electrical Power	SE		4			SP14, SP15	
EET 445: Electro-Mechanical Controls*	SE		4			N/A	
EET 452: Computer Networks	R		4			SP14, SP15	
EET 478: Senior Projects I	SE		2			F13, F14	
EET 479: Senior Projects II	SE		2			W14, W15	
EET 489: Senior Technical Presentations	R		2			SP14, SP15	
IET 490: Cooperative Education	SE		4			W15, SP15	
IET 160: Computer-aided Design and Drafting	SE		4			W15, SP15	
IET 242: Instrumentation	SE		4			F14, W15	
IET 301: Quality Control	R		4			W15, SP15	
IET 380: Quality Control	R		4			SP14, SP15	

IET 455: Engineering Project Management	R		4			S14, W15	
MATH 172: Calculus I	R	5				W15, SP15	
MATH 173: Calculus II	R	5				W15, SP15	
MATH 260: Sets and Logic	SE	5				W15, SP15	
MATH 265: Linear Algebra I	SE	4				W15, SP15	
MATH 272: Multivariable Calculus I	SE	5				W15, SP15	
MATH 311: Statistical Concepts and Methods	SE	5				W15, SP15	
MATH 330: Discrete Mathematics	SE	5				W15, SP15	
MATH 376: Differential Equations I	SE	3				F13, F14	
PHYS 111: Introductory Physics I	SE	4				W15, SP15	
PHYS 112: Introductory Physics II	SE	4				W15, SP15	
PHYS 113: Introductory Physics III	SE	4				SP14, SP15	
PHYS 111Lab: Introductory Physics I Lab	SE	1				W15, SP15	
PHYS 112Lab: Introductory Physics II Lab	SE	1				W15, SP15	
PHYS 113Lab: Introductory Physics III Lab	SE	1				SP14, SP15	
PHYS 181: General Physics I	SE	4				F14, W15	
PHYS 182: General Physics II	SE	4				W15, SP15	
PHYS 183: General Physics III	SE	4				SP14, SP15	
PHYS 181Lab: General Physics I Lab	SE	1				F14, W15	
PHYS 182Lab: General Physics II Lab	SE	1				W15, SP15	
PHYS 183Lab: General Physics III Lab	SE	1				SP14, SP15	
ADMG 385: Business Communications and Report Writing	SE				5	W15, SP15	
CS 325: Technical Writing in Computer Science	SE				3	W15, SP15	
ENG 310: Technical Writing	SE				4	W15, SP15	
COM 207: Introduction to Communication Studies	SE				4	W15, SP15	
COM 345: Business and Professional Speaking	SE				4	W15, SP15	
IET 389: Technical Presentations*	SE				3	N/A	
*Course has been discontinued							

Add totals to show all courses in program		42-44	76	38-42	6-9		
OVERALL TOTAL CREDIT HOURS FOR THE DEGREE	180						
PERCENT OF TOTAL		*~23%*	*42%*	*~21%*	*~3%*		

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.

Figure 5.1 Pre-requisite flowchart for Electronics Engineering Technology Program



*Course has been discontinued

CRITERION 6. FACULTY

A. Faculty Qualifications

There are four faculty members assigned to the EET program. The four faculty include a tenured full professor, a tenured associate professor, a tenure-track assistant professor, and a full-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 from the Physics, Mathematics, or ETSC departments.

Taiqain Yang, Ph.D. is a full professor who is allocated 100% to the EET program and who teaches at the Des Moines campus. Dr. Yang completed his Ph.D. at Washington State University in 1993 and specializes in analog design and control systems and teaches approximately 36 credits per year in the EET program. Dr. Yang plans to retire at the end of the 2015-2016 academic year, at which time, his position will be re-allocated to the Ellensburg campus.

Mr. Lad Holden is an associate professor who is allocated 25% to the EET program and teaches at the Ellensburg campus, where he serves as the department chair for the ETSC department the remaining 75% of the time. Mr. Holden completed his Master of Technology at Arizona State University in 1994 and specializes in Micro-controller and instrumentation systems and teaches approximately 12 credits per year in the EET program. Mr. Holden's appointment as department chair will continue through the 2017-2018 academic year, when he will return to teaching within the EET program 100% of the time unless re-appointed by the Dean.

Mr. Nathan Davis is an assistant professor who is allocated 100% to the EET program and teaches at the Ellensburg campus, where he also serves as EET program coordinator. Mr. Davis completed his Master of Arts from Boise State University in 2006 and is nearing completion on his Master of Science in Electrical Engineering from the University of Idaho. Mr. Davis specializes in power system analysis and engineering education and teaches approximately 36 credits per year in the EET program.

Mr. Christopher Hobbs is a lecturer who is allocated 75% to the EET program and teaches at the Ellensburg campus. Mr. Hobbs completed his Master of Science at Central Washington University in 2013 and specializes in instrumentation and process control and teaches approximately 24 credits per year in the EET program.

Each faculty member's resume has been 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 load is defined as 45 workload units (WLU) per year. Each WLU is equivalent to one lecture contact hour. A 2 hour lab is also considered two WLU (but only one credit for students). Research and Service tasks (such as program coordination, department & 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 9 WLU split between research and service categories. Details of the WLU assignments for each MET program instructor are given in Table 6-2.

C. Faculty Size

Due to increased EET enrollment, the appointment of Mr. Holden as department chair, and the limited available of Dr. Yang, the EET program is straining to maintain the program educational objectives with available faculty resources. Mr. Davis is assigned 100% to the EET program and teaches approximately 36 credits per year on the Ellensburg campus where most of the student population resides. Mr. Holden is assigned approximately 25% to the EET program and serves as department chair the remaining time. Dr. Yang is assigned 100% to the EET program, however he serves a small population of non-traditional students at the Des Moines campus and therefore cannot be utilized on the main campus. To offset the limited faculty resources available, Mr. Christopher Hobbs has been hired as an adjunct instructor. However, until an additional full time tenure track professor is hired, the program will struggle to meet the program and educational objectives and will have limited opportunity for growth.

Student advising is split between three EET faculty advisors: Dr. Yang, Mr. Holden, and Mr. Davis. Dr. Yang serves as the primary advisor for the EET program on the Des Moines campus, while Mr. Davis serves as the primary advisor on the Ellensburg Campus. Mr. Holden advises a smaller number of EET students as he also serves as the advisor for the Industrial Technology (IT) program. Other faculty members in the ETSC department who teach core classes have responsibilities to other programs and do not have advising responsibilities for EET students.

Mr. Davis serves as EET program coordinator, with responsibility for organizing and coordinating the EET Industrial Advisory Committee (IAC), publication of the annual newsletter and program reports, contacts with prospective students, alumni, and industrial contacts, curriculum change review, resolving course scheduling conflicts, fundraising, program accreditation, and other program related tasks that may arise. In addition to these responsibilities, Mr. Davis also serves as the IEEE advisory for

the student chapter.

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 also be available. For non-tenure track faculty, most funding comes from the department discretionary funds or foundation accounts.

Typical professional development activities in recent years include the ASEE annual conference, Institute of Electrical and Electronics Engineers (IEEE) Conference, and ABET Faculty Workshops. Details of individual faculty professional development activities are listed in individual resumes in Appendix B.

E. Authority and Responsibility of Faculty

Changes to the program curriculum are initiated by program faculty, in consultation with the EET Industrial Advisory Committee (IAC). According to CWU Policies (Section 5-1.0-5) the provost has ultimate responsibility for

".. monitor(ing) curriculum development. The teaching faculty collectively is the major force governing the curriculum of the university. The faculty initiate curriculum changes through academic department chairs and the appropriate dean. Approved proposals are reviewed by the Faculty Senate curriculum committee. All curricular changes are subject to examination by the provost/senior vice president for academic affairs after the faculty review process is complete; some are subject to further review by the higher education coordinating board and the board of trustees. State legislation controls the range of degree programs which may be offered."

Curriculum change forms are available at the Faculty Senate web page (http://www.cwu.edu/~fsenate/CurriculumForms/index.html). Course quality and consistency is monitored and enhanced through the CQI process outlined in section 4.

Table 6-1. Faculty Qualifications

Name of Program

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment [2] T TT NTT	FT or PT [4]	Years of Experience			Professional Registration/ Certification	Level of Activity H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Taiqain Yang	PhD	P	T	FT	10	24	18	N/A	M	L	L
Lad Holden	MT	ASC	T	FT	5	16	16	N/A	L	L	L
Nathan Davis	MA	AST	TT	FT	8	9	4	EIT	M	H	L
Christopher Hobbs	MS	I	NTT	PT	30	6	6	N/A	L	L	L
Darren Olson	PhD	ASC	T	FT	3	18	7	N/A	H	H	L
Michael Whelan	PhD	ASC	T	FT	5	30	8	PE	H	M	L

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to 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. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.
4. At the institution

Table 6-2. Faculty Workload Summary

Name of Program

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]	
Taiqain Yang	FT	EET all	42	0	3	100
Lad Holden	FT	EET 342, 375, 376, 452	18	0	27	50
Nathan Davis	FT	EET 221, 312, 324, 370, 332, 432, IET 373	36	6	3	100
Christopher Hobbs	PT	EET 371, 372, 323, 343	24	0	0	100
Darren Olson	FT	IET 380	33	6	6	5%
Michael Whelan	FT	IET 301, IET 455	36	5.5	3.5	10%

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the self-study 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[1]

A. Offices, Classrooms and Laboratories

Summarize each of the program's facilities in terms of their ability to support the attainment of the student outcomes and to provide an atmosphere conducive to learning.

1. Offices (such as administrative, faculty, clerical, and teaching assistants) and any associated equipment that is typically available there.

2. Classrooms and associated equipment that is typically available where the program courses are taught.

3. Laboratory facilities including those containing computers (describe available hardware and software) and the associated tools and equipment that support instruction. Include those facilities used by students in the program even if they are not dedicated to the program and state the times they are available to students. Complete Appendix C containing a listing the major pieces of equipment used by the program in support of instruction.

B. Computing Resources

Hogue Technology Center is equipped with two dedicated PC labs located in rooms 118 and 120. Room 118 has twenty seven PC stations available and Room 120 has twenty stations for a combined capacity of 47 students. Both computer labs serve as campus resources with a general suite of applications and engineering specific applications such as AutoCad®, SolidWorks®, and Rhino 3D. The computer labs are used for instruction within the ETSC department and priority is given to students within the department.

In addition to the

Describe any computing resources (workstations, servers, storage, networks including software) in addition to those described in the laboratories in Part A, which are used by the students in the program. Include a discussion of the accessibility of university-wide computing resources available to all students via various locations such as student housing, library, student union, off-campus, etc. State the hours the various computing facilities are open to students. Assess the adequacy of these facilities to support the scholarly and professional activities of the students and faculty in the program.

C. Guidance

Describe how students in the program are provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories.

D. Maintenance and Upgrading of Facilities

[1] Include information concerning facilities at all sites where program courses are delivered.

Describe the policies and procedures for maintaining and upgrading the tools, equipment, computing resources and laboratories used by students and faculty in the program.

E. Library Services

Describe and evaluate the capability of the library (or libraries) to serve the program including the adequacy of the library's technical collection relative to the needs of the program and the faculty, the adequacy of the process by which faculty may request the library to order books or subscriptions, the library's systems for locating and obtaining electronic information, and any other library services relevant to the needs of the program.

F. Overall Comments on Facilities

Describe how the program ensures the facilities, tools and equipment used in the program are safe for their intended purposes (See the 2013-2014 APPM II.G.6.b.(1)).

CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

The EET program was coordinated by Nathan Davis until June 2015 when he resigned from the department. This leaves Mr. Lad Holden as the only full time EET faculty member so he is the EET program coordinator and the ETSC Department Chair dealing with higher level administrative issues and program planning. Dr. Paul Ballard recently replaced Dr. Connie Lambert as Dean of the College of Education and Professional Studies.

B. Program Budget and Financial Support

Budget resources are allocated based on meeting student outcomes and the number of students who have been accepted into majors in the department that require program courses.

Faculty that have a need for graders, lab assistants during class and to make facilities available for students and ask for are generally provided with this help. The provost office provides support for those who wish to improve their teaching.

Ongoing support for equipment maintenance, repair, and operation is provided for by lab fees and department summer revenue distributions.

CWU has been in a declining budget cycle for the past 5 years so one time money has not been available except when the extension to the building was constructed but even then the equipment funding for the remodel of the older section of the building was removed from the budget by the legislature.

The students are currently able to attain the student outcomes.

C. Staffing

I&ET has one fulltime administrative staff person. Faculty are also supported in classroom, laboratory, and scholarly activities by a 2 Instructional and Classroom Support Technicians. Student help for lab sections is also utilized through department and Work-Study funds. The department usually has 2 graduate assistantships. Student access to labs outside of scheduled class times is made possible through student lab attendants made available with department and work-study funding.

D. Faculty Hiring and Retention

To hire a new faculty member the department requests a position from the dean and if the dean approves the request is forwarded to the provost. With the provosts approval a position description is generated assigned a position number and a salary range. HR

validates the description and works with the department to get the position posted and advertised as appropriate.

Minimum standards are developed and all candidates that apply are screened, by two members of a hiring committee, based on those standards. All candidates that meet the minimum are then screened by the whole committee using a tool that the committee develops to determine the most desired candidates. A subset of candidates are then interviewed by phone using the same set of questions for each candidate and then the committee determines who to bring to campus for interviews where they are asked a similar set of questions, meet the dean, department chair, tour campus and talk to an HR representative.

The dean then makes an offer based on the recommendation of the department.

Retaining faculty is done through promotion and merit pay full professors that qualify during their post tenure review cycle.

E. Support of Faculty Professional Development

Tenured, tenure-track, and fulltime non-tenure track faculty in the college have access to $1000 in professional development funds annually. The provost's office guarantees each faculty member at CWU $700 annually and the college provides an additional $300 each year. Additional, on average, about $2000 of summer net revenue funds are spent by the department for professional development per faculty member. Faculty can also apply for funds from the Office of Graduate Research and International Studies. Examples of individual expenditures in support of faculty professional development are outlined in Criterion 6D Professional Development and Appendix B in individual resumes.

PROGRAM CRITERIA

See Section 4

APPENDICES

Appendix A – Course Syllabi

Electronics Engineering Technology Program Course Syllabi Index

Course Number	Course Name	Credit	Status
	EET Core		
CS 110	Programming Fundamentals I	4	Required
EET 221	Basic Electricity	4	Required
EET 312	Basic Electronics	4	Required
EET 313	Electrical Networks	4	Required
EET 323	Active Linear Circuits	4	Required
EET 324	Advanced Electrical Networks	4	Required
EET 370	Programming Applications in Technology	4	Required
EET 371	Digital Circuits	4	Required
EET 372	Advanced Digital Circuits	4	Required
EET 375	Microprocessors	4	Required
EET 376	Microprocessors and Instrumentation	4	Required
EET 452	Computer Networks	4	Required
EET 478	Senior Projects I	2	Required 4 cr total
EET 479	Senior Projects II	2	
IET 490	Cooperative Education	4	
EET 489	Senior Technical Presentations	2	Required
IET 301	Engineering Project Cost Analysis	4	Required
IET 380	Quality Control	4	Required
IET 455	Engineering Project Management	4	Required
	EET Elective Sequence (Choose 2 of 3 sequences)		
CS 111	Programming Fundamentals II	4	SE
CS 301	Data Structures	4	SE
CS 302	Advanced Data Structures	4	SE
	Or		
IET 242	Instrumentation	4	SE
EET 343	Process Control	4	SE
EET 445	Electro-Mechanical Controls	4	SE
	Or		
IET 160	Computer-aided Design and Drafting	4	SE
EET 332	Generation of Electrical Power	4	SE
EET 432	Transmission and Distribution of Electrical Power	4	SE

Mathematics			
MATH 172	Calculus I	5	Required
MATH 173	Calculus II	5	Required
MATH 260	Sets and Logic	5	
MATH 265	Linear Algebra I	4	
MATH 272	Multivariable Calculus I	5	SE
MATH 311	Statistical Concepts and Methods	5	(Choose 1)
MATH 330	Discrete Mathematics	5	
MATH 376	Differential Equations	3	
Basic Science			
PHYS 111/111L	Introductory Physics I	5	SE
PHYS 112/112L	Introductory Physics II	5	SE
PHYS 112/112L	Introductory Physics II	5	SE
PHYS 181/181L	General Physics I	5	SE
PHYS 182/182L	General Physics II	5	SE
	or		
CHEM 181/181L	General Chemistry I	5	SE
PHYS 183/183L	General Physics III	5	SE
Communications			
ADMG 385	Business Communications and Report Writing	5	SE (Choose 1)
CS 325	Technical Writing in Computer Science	3	
ENG310	Technical Writing	4	
Speech			
COM 207	Introduction to Communication Studies	4	SE (Choose 1)
COM 345	Business and Professional Studies	4	
IET 389	Technical Presentations	4	

ABET Course Syllabus for CS 110: Programming Fundamentals I

1. Course number and name: CS 110: Programming Fundamentals I

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Tatiana Harrison

4. Textbook, title, author, and year:
   - Gaddis, *Starting Out with Java, From Control Structures through Objects*, 5th Edition, Pearson, 2012

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Fundamental concepts of programming from an object-oriented perspective. Classes, objects and methods, algorithm development, problem-solving techniques, basic control structures, primitive types and arrays.

   5b. Pre-requisites or co-requisites:
   None

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course provides in introduction to structured programming languages

   6a. Specific outcomes of instruction:
   - The student will program in a structured programming language
   - The student will define to variables, data types and operators
   - The student will use conditional statements and flow control instructions in a structured language

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Variables program I/O
   - Data types and arithmetic operators
   - Conditional statements and logic operators
   - While, do-while loops
   - File I/O
   - Methods and Classes
   - Constructors
   - Arrays and array operations

ABET Course Syllabus for EET 221: Basic Electricity

1. Course number and name: EET 221: Basic Electricity

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Nathan Davis

4. Textbook, title, author, and year:
   - Hambley, *Electrical Engineering, Principles and Applications* 6th Ed, Pearson, 2014

   4a. Other supplemental materials:
   - TI-36X Pro Calculator

5. Specific course information:
   5a. Brief description of the content of the course (catalog description):
   The fundamental principles of DC, AC, series and parallel circuits, resistance, capacitance, inductance, and power are explored. Theory is reinforced by practical laboratory experimentation.
   5b. Pre-requisites or co-requisites:
   MATH 154
   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course is an introductory course in electrical theory. The students learn the fundamental principles electrical circuits including current, impedance, voltage and power. The students are introduced to series and parallel circuits and applications of Ohm's Law, Kirchhoff's Voltage Law, Kirchhoff's current law and phasors to the analysis of AC and DC circuits.

   6a. Specific outcomes of instruction:
   - The student will use the basic electrical laws (Ohm's Law, Kirchhoff's Voltage Law, Kirchhoff's Current Law, power) to analyze electrical circuits
   - The student will solve direct current (DC) series, parallel, and series-parallel networks.
   - The student will solve alternating current (AC) series and parallel networks using complex notation.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (introduced), 3.b (introduced), 3.c (introduced)

7. Brief list of topics covered:
   - Ohm's Law and Electrical power
   - Introductory DC circuit analysis
   - Introductory steady state AC circuits analysis

- Passive circuit elements (resistors, potentiometers, rheostats, capacitors, inductors)

ABET Course Syllabus for EET 312: Basic Electronics

1. Course number and name: EET 312: Basic Electronics

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Christopher Hobbs

4. Textbook, title, author, and year:
   - Floyd, & Buchla, *Analog Fundamentals: A systems Approach*, Pearson, 2013

   4a. Other supplemental materials:
   - TI-36X Pro Calculator

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Analysis of semiconductor devices and their applications in power supplies, amplifiers, and control circuits. Theoretical concepts will be reinforced by circuit simulation and laboratory experimentation.

   5b. Pre-requisites or co-requisites:
   EET 221

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course provides an introduction to solid state devices. It provides an introduction to the theory of operation and device characteristics for a variety of solid state devices including PN junction diodes, zener diodes, bipolar junction transistors, Darlington transistors and field effect transistors.

   6a. Specific outcomes of instruction:
   - The student will design, analyze, and implement electronic circuits containing diodes.
   - The student will design, analyze, and implement electronic circuits containing bipolar junction transistors (BJT) and Field-Effect Transistors (FET).
   - The student will analyze amplifier frequency response.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.c (introduced), 3.d (introduced)

7. Brief list of topics covered:
   - Basic Analog Concepts
   - The PN junction
   - Diodes characteristics and applications
   - Bipolar junction transistor characteristics and applications
   - BJT biasing and analysis
   - BJT amplifiers
   - Field Effect Transistors
   - Amplifier configurations and multistage amplifiers

ABET Course Syllabus for EET 313: Electrical Networks

1. Course number and name: EET 313: Electrical Networks

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Nathan Davis

4. Textbook, title, author, and year:
   - Phillips et al., *Signals, Systems, and Transforms*, 5th Edition, Pearson, 2014

   4a. Other supplemental materials:
   - TI-36X Pro Calculator

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Introduction to continuous time linear signals and systems. Topics include differential equation models, convolution, and Fourier Analysis.

   5b. Pre-requisites or co-requisites:
   MATH 173, EET 312

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course provides an introduction to continuous time linear systems and signals. Fourier analysis is used to analysis passive filter design.

   6a. Specific outcomes of instruction:
   - The student will analyze the transient response of capacitive and inductive circuits using differential equation models
   - The student will use mathematical modeling software such as Matlab to model and analyze signals and systems.
   - The student will represent systems mathematically and with block diagrams.
   - The student will use Fourier analysis to determine signal response to passive filters

   b. Criterion 3 student outcomes addressed by course:
   - 3.b (reinforced), 3.f (introduced)

7. Brief list of topics covered:
   - Continuous time signals and systems
   - Analyze signals as piece wise functions
   - Impulse, unit step, and ramp functions
   - Even, Odd functions and properties
   - Euler's relation and applications to signals
   - Frequency and Phase spectrums
   - Fourier analysis

ABET Course Syllabus for EET 323: Active Linear Circuits

1. Course number and name: EET 323: Active Linear Circuits

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Christopher Hobbs

4. Textbook, title, author, and year:
   - Floyd et al., *Basic Operational Amplifiers and Linear Integrated Circuits*, 2nd Edition, Prentice Hill, 1999

   4a. Other supplemental materials:
   - TI-36X Pro Calculator

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Analysis and design of operational amplifier circuits including amplifiers, comparators, active filters, controls, and instrumentation devices.

   5b. Pre-requisites or co-requisites:
   MATH 172, EET 312

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course provides an introduction to active linear circuits. It emphasizes analysis of op-amp circuits using KVL and KCL. Stability and frequency response are explored.

   6a. Specific outcomes of instruction:
   - The student will design, analyze, and implement electronic circuits containing operational amplifiers
   - The student will explain the behavior of typical amplifier and comparator circuits using active linear circuits.
   - The student will be able to use manufacturer's data sheets to select appropriate electronic components
   - The student will communicate their development process, work, assumptions and evaluations to peers and instructors.

   b. Criterion 3 student outcomes addressed by course:
   - 3.c (assessed), 3.d (reinforced), 3.g (introduced)

7. Brief list of topics covered:
   - Analog Signals and Sources
   - Operational Amplifiers characteristics and responses
   - Basic Op-Amp circuits
   - Review of passive filters and an introduction to active filters
   - Oscillators and Timers
   - Voltage regulators and switching circuits

- Special Purpose amplifiers
- Data conversion circuits
- Communication circuits (as time permits)

ABET Course Syllabus for EET 324: Advanced Electrical Networks

1. Course number and name: EET 324: Advanced Electrical Networks

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Nathan Davis

4. Textbook, title, author, and year:
   - Phillips et al., *Signals, Systems, and Transforms*, Fifth Edition, Pearson, 2014

   4a. Other supplemental materials:
   - Access to MATLab 2014a or equivalent Mathematical Software
   - TI-36X Pro Calculator

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   Analysis of continuous-time linear time-invariant systems using Laplace transforms. Topics include the forward and inverse Laplace transform, system response and stability, transfer functions and state variable modeling.

   5b. Pre-requisites or co-requisites:

   EET 313

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Required.

6. Specific goals for the course:

   This course provides an introduction to circuit analysis using Laplace transforms. It emphasizes analysis in the frequency domain, Laplace transforms and their inverse, stability, transfer functions and state variable modeling.

   6a. Specific outcomes of instruction:
   - The student will determine the Laplace transform given time domain functions
   - The student will determine the inverse Laplace transforms given s-domain functions
   - The student will apply Laplace transform methods to obtain complete first order circuit solutions
   - The student will determine a given circuits transfer function and use it to determine circuit operation and relationship characteristics.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (assessed), 3.b (assessed), 3.f (reinforced)

7. Brief list of topics covered:
   - Solutions of ordinary first order differential equations
   - Solutions of ordinary second order differential equations
   - Solutions to higher order differential equations
   - Transfer functions using differential equations

- Laplace Transforms
- Inverse Laplace transforms
- Laplace impedance
- Transfer functions using Laplace transforms
- State variable modeling
- Discreet time systems (as time permits)

ABET Course Syllabus for EET 370: Programming Applications in Technology

1. Course number and name: EET 370: Programming Applications in Technology

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Nathan Davis

4. Textbook, title, author, and year:
   - Liang, *Introduction to Programming with C++* 3rd Edition, Pearson, 2014

   4a. Other supplemental materials:
   - None

5. Specific course information:
   5a. Brief description of the content of the course (catalog description):
   Programming applications with an emphasis on networking, computer interfacing, and embedded systems applications.
   5b. Pre-requisites or co-requisites:
   MATH 154 and CS 110
   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course is a second programming course in a structured text environment. The students learn the fundamentals of the C/C++ programming language and are introduced to embedded programming considerations and methods.

   6a. Specific outcomes of instruction:
   - The student will write software test and debug programs
   - The student will write a computer program that performs data conversions using arithmetic formulas

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.b (reinforced), 3.d (introduced), 3.f (introduced)

7. Brief list of topics covered:
   - Introduction to Integrated Development Environments including Visual Studio and Atmel Studio
   - Introduce of the C/C++ programming language and a comparison between C/C++ and JAVA, as introduced in CS 110
   - Application of numerical processes to data manipulation
   - Applications and methods of programming integrated microcontrollers in C/C++

ABET Course Syllabus for EET 371: Digital Circuits

1. Course number and name: EET 371: Digital Circuits

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Michael Waytuck

4. Textbook, title, author, and year:
   - Kleitz, William, *Digital Electronics – A practical approach with VHDL*, 9th Ed, Pearson, 2012

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Introduction to number systems, Boolean algebra, combinational logic, and the analysis and design of digital logic circuits.

   5b. Pre-requisites or co-requisites:
   None

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course introduces the students to digital logic and focuses on logic gates, Boolean logic and combinational logic. Flip-flops and latches are introduced at the end of the course as time permits

   6a. Specific outcomes of instruction:
   - The student will construct and analyze combinational logic circuits.
   - The student will simplify combinational logic circuits using Boolean algebra and Karnaugh maps.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (introduced), 3.c (introduced)

7. Brief list of topics covered:
   - Digital system basics
   - Number Systems, Logic Gates
   - Boolean Algebra
   - Karnaugh Maps
   - Combinational Logic
   - Decoders/Encoders/Multiplexers
   - Introduction to Latches and Flip-flops

ABET Course Syllabus for EET 372: Advanced Digital Circuits

1. Course number and name: EET 372: Advanced Digital Circuits

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Michael Waytuck

4. Textbook, title, author, and year:
   - Kleitz, William, *Digital Electronics – A practical approach with VHDL*, 9th Ed, Pearson, 2012

   4a. Other supplemental materials:
   - None

5. Specific course information:
   5a. Brief description of the content of the course (catalog description):
   Introduction to sequential logic, state machines, digital interfacing techniques and memory devices. Programmable logic devices introduced as time permits
   5b. Pre-requisites or co-requisites:
   EET 371
   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required.

6. Specific goals for the course:
   This course introduces the students to digital logic and focuses on logic gates, Boolean logic and combinational logic. Flip-flops and latches are introduced at the end of the course as time permits
   6a. Specific outcomes of instruction:
   - The student will be able to design, analyze, and implement digital circuits containing synchronous and asynchronous state machines
   - The student will be able to explain the different types of semiconductor memory commonly used in digital systems
   - The student will be able to use manufacturer's data sheets to select appropriate digital logic circuits.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.c (reinforced), 3.e (introduced), 3.g (reinforced)

7. Brief list of topics covered:
   - Latches and flip-flops
   - Synchronous state machines
   - Mealy Moore State Machines
   - Registers
   - Memory systems
   - Bus Interfacing
   - Logic Families and Introduction to Computer Architecture

ABET Course Syllabus for EET 375: Microprocessors

1. Course number and name: EET 375: Microprocessors

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Lad Holden

4. Textbook, title, author, and year:
   - MPASM/MPLINK User's Manual
   - MPLAB IDE User's Guide
   - MPLAB ICD 2 In-Circuit Debugger User's Guide

   4a. Other supplemental materials:
   - Microchip's Reference Publication: www.micro-chip.com

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   A study of microprocessor system components, functions, and programming methods using the assembly programming language

   5b. Pre-requisites or co-requisites:

   CS 110 and EET 372

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Required

6. Specific goals for the course:

   This is a first course in microprocessors

   6a. Specific outcomes of instruction:
   - The student will use assembly language to configure, read from and write to parallel ports
   - The student will use assembly language to manipulate data for use by the machine or by a user
   - The student will use assembly language to configure and use an analog to digital (A/D) converter
   - The student will use assembly language to configure and use a serial port
   - The student will be able to write interrupt service routines to respond to a system input
   - The student will be able to use specification sheets to determine how to configure and program microcontrollers and their associated ports
   - The student will communicate their development process, work, assumptions, and evaluations to their peers and the professor

   6b. Criterion 3 student outcomes addressed by course:
   - 3.g (assessed), 3.h (introduced), 3.j (introduced)

7. Brief list of topics covered:
   - The MPLab programming environment
   - Using specification sheets

- Assembly language programming
- Microprocessor organization
- Parallel port interfaces
- Analog-to-digital conversion
- Serial port interfaces
- Interrupt service routines (ISR)
- Basic pulse width modulation (PWM) for DC Motors
- Compiling and communicating technical information

ABET Course Syllabus for EET 376: Microprocessors and Instrumentation

1. Course number and name: EET 376: Microprocessors and Instrumentation

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Lad Holden

4. Textbook, title, author, and year:
   - MPASM/MPLINK User's Manual
   - MPLAB IDE User's Guide
   - MPLAB ICD 2 In-Circuit Debugger User's Guide

   4a. Other supplemental materials:
   - Microchip's Reference Publication: www.micro-chip.com

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   A study of microprocessor system configuration, design, integration of input and output devices, and programming development in C/C++

   5b. Pre-requisites or co-requisites:

   EET 370 and EET 375

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Required

6. Specific goals for the course:

   This is a second course in microprocessors

   6a. Specific outcomes of instruction:
   - The student will be able to use the C programming language to configure, read from, and write to peripheral ports
   - The student will be able to use the C programming language to manipulate data for use by the machine or by a user and optimize the process
   - The student will be able to read data into the microprocessor from external sensors
   - The student will be able to configure and use a serial port to communicate information
   - The student will be able to write interrupt service routines to respond to a system input.
   - The student will be able to use specification sheets to determine how to configure and program microcontrollers and their associated ports.
   - The student will communicate their development process, work, assumptions, and evaluations to their peers and the professor.
   - The student will be able to work as a member of a team where different team members are responsible for writing separate modules of a program.

   6b. Criterion 3 student outcomes addressed by course:

- 3.e (assessed), 3.h (reinforced), 3.j (reinforced)

7. Brief list of topics covered:
   - C Programming environment
   - Use specification sheets
   - 16 bit C/Assembly language programming
   - 16 bit microprocessor organization
   - Parallel ports
   - Timers
   - Analog to digital converters
   - Serial ports
   - Interrupt service routines (ISR)
   - Compiling and communicating technical information

ABET Course Syllabus for EET 452: Computer Networks

1. Course number and name: EET 452: Computer Networks

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Lad Holden

4. Textbook, title, author, and year:
   - Tomasi, *Introduction to Data Communications and networking*, Prentice Hall, 2005

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   A study of computer network protocols, topologies, and device configurations

   5b. Pre-requisites or co-requisites:
   EET 375

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This is an introductory course in computer networks and topologies

   6a. Specific outcomes of instruction:
   - The student will be able to describe LAN topologies including their operational characteristics
   - The student will be able to describe LAN characteristics including MAC and Ethernet control characteristics
   - The student will be able to explain how Internet TCP/IP on Ethernet addressing protocol works.
   - The student will be able to explain how network addressing works with subnets and masks
   - The student will be able to explain how address resolution works with IP addressing and hardware
   - The student will be able to explain how Internet Control Message Protocol (ICMP) works
   - The student will be able to explain how TCP and UDP are similar and different in their operation over IP in the Transport Layer
   - The student will be able to explain the enhanced operations of the Internet Protocol Version 6
   - The student will be able to explain how the Domain Name Protocols work including BOOTP and DHCP operations
   - The student will be able to describe TCP/IP application layer protocols and their uses

- The student will be able to describe the operation of Integrated Services Data Networks and their use.

6b. Criterion 3 student outcomes addressed by course:

- 3.h (assessed), 3.j (assessed)

7. Brief list of topics covered:
   - Network Topologies and devices
   - Local area networks (LAN)
   - TCP/IP protocol
   - Networks and Network-Layer Protocols
   - Internet Control Message Protocols
   - Transport Layer Protocols
   - Configuration and Domain Name Protocols
   - TCP/IP Application-Layer Protocols

ABET Course Syllabus for EET 478: Senior Project I

1. Course number and name: EET 478: Senior Project I

2. Credits and contact hours: 2 credit hours, 2 contact hours per week

3. Instructor's Name: Lad Holden

4. Textbook, title, author, and year:
   - None

   4a. Other supplemental materials:
   - N/A

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   Research, planning, and conceptual section of a capstone analysis and design project. Collaborative group endeavors in cooperation with industry, community, or government entities are encouraged.

   5b. Pre-requisites or co-requisites:

   Senior Standing

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Required

6. Specific goals for the course:

   This course is a first course in senior project design.

   6a. Specific outcomes of instruction:
   - The student will be able to communicate effectively.
   - The student will be able to research a technical subject.
   - The student will be able to explain how diversity and contemporary issues affect design and manufacturing.
   - The student will be able to determine the basic design specifications of a project.
   - The student will be able to determine the basic components of a project.
   - The student will be able to develop a project time table that includes research, design, test, build, and documentation benchmarks.

   b. Criterion 3 student outcomes addressed by course:
   - 3.i (reinforced), 3.k (reinforced)

7. Brief list of topics covered:
   - Research and communication
   - Ethical, social, and professional responsibilities
   - Diversity and contemporary issues
   - Design specifications
   - Project time tables

ABET Course Syllabus for IET 301: Engineering Project Cost Analysis

1. Course number and name: IET 301: Engineering Project Cost Analysis

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Michael Whelan

4. Textbook, title, author, and year:
   - Newman, Lavelle and Eschenbach, *Engineering Economic Analysis*, 12th Edition, Oxford University Press, 2014

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Techniques of economic cost analysis applied to engineering projects: interest, present value, and annual equivalence, rate of return, payout criteria, and breakeven modeling

   5b. Pre-requisites or co-requisites:
   MATH 153

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course provides an introduction to cost analysis techniques used in engineering

   6a. Specific outcomes of instruction:
   - The student will demonstrate an understanding of the theoretical and conceptual basis upon which the practice of financial project analysis is built.
   - The student will demonstrate a proficiency in using Microsoft Excel to solve engineering economic problems.
   - The student will demonstrate a basic knowledge of project cost analysis tools

   6b. Criterion 3 student outcomes addressed by course:
   - 3.i (introduced)

7. Brief list of topics covered:
   - Making Economic decisions
   - Engineering Costs and cost estimating
   - Interest and equivalence
   - Equivalence for repeated cash flows
   - Present worth analysis
   - Annual cash worth analysis
   - Rate of return analysis

- Choosing the best alternative
- Depreciation
- Income Taxes
- Inflation and Price Change
- Replacement Analysis

ABET Course Syllabus for IET 380: Quality Control

1. Course number and name: IET 380: Quality Control

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Darren Olson

4. Textbook, title, author, and year:
   - Besterfield, *Quality Improvement*, 9th Edition, Pearson, 2009

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Provides the foundation necessary to understand and apply statistical quality control techniques, product reliability procedures, and the management aspects of quality assurance.

   5b. Pre-requisites or co-requisites:
   BUS 221 or MATH 311 or PSY 362 or permission

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course provides an quality control through an introduction to statistical process control and various other methods

   6a. Specific outcomes of instruction:
   - The student will describe how quality is connected to leadership style, strategic management, operations management, and human relations practices.
   - The student will be able to describe the fundamental principles of statistical probability, particularly for normal, binomial, and Poisson distributions, and will be able to correctly apply these principles in performing probability calculations.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.k (reinforced)

7. Brief list of topics covered:
   - Introduction to quality improvement
   - Lean enterprises
   - Six sigma
   - Statistical process control
   - Fundamentals of statistics
   - Control Charts for variables
   - Additional SPC techniques for variables
   - Fundamentals of probability

- Control charts for attributes
- Acceptance sampling systems
- Reliability
- Management and Planning tools
- Quality management systems (QMS)

ABET Course Syllabus for IET 455: Engineering Project Management

1. Course number and name: IET 455: Engineering Project Management

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Michael Whelan

4. Textbook, title, author, and year:
   - Pinto, *Project Management: Achieving Competitive Advantage*, 3rd Edition, Pearson, 2013

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Project-based synthesis used in engineering project management. Topics include bidding, contract management, scheduling, cost estimating and control, logistics, conflict management, team building, negotiating, and risk assessment.

   5b. Pre-requisites or co-requisites:
   By Permission

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course provides an introduction to project management techniques used in engineering

   6a. Specific outcomes of instruction:
   - The student will describe the key characteristics of a project
   - The student will apply the principles of network analysis, PERT, time-cost issues, and decision making to expedite project activities
   - The student will describe the stages of a project management life cycle
   - The student will create, given a project scenario, a work breakdown structure and a project baseline plan, and outline each of the key elements of the project
   - The student will establish budgets, assign resources, draft proposals, and implement plans
   - The student will conduct meetings, establish reporting mechanisms, and implement plans
   - The student will assess risk in projects
   - The student will demonstrate proper methods to close projects in a systematic manner

   6b. Criterion 3 student outcomes addressed by course:
   - 3.k (introduced)

7. Brief list of topics covered:
    - The organizational context
    - Scope Management
    - Cost Estimation and Budgeting
    - Project Scheduling
    - Critical Chain Scheduling
    - Resource management
    - Project evaluation and control
    - Risk management
    - Leadership and the project manager
    - Project team building

ABET Course Syllabus for CS 111: Programming Fundamentals II

1. Course number and name: CS 111: Programming Fundamentals II

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Dr. Filip Jagodzinski

4. Textbook, title, author, and year:
   - Gaddis, *Starting Out with Java, From Control Structures through Objects*, 5th Edition, Pearson, 2012

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Continuation of object-oriented programming concepts introduced in CS 110. Inheritance, exceptions, graphical user interfaces, recursion, and data structures.

   5b. Pre-requisites or co-requisites:
   MATH 153, CS 110

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides in introduction to structured programming languages

   6a. Specific outcomes of instruction:
   - The student will program in a object oriented programming language
   - The student will use inheritance, exceptions, and recursion in a structured programming language
   - The student will design and manipulate basic data structures in JAVA

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.b (reinforced)

7. Brief list of topics covered:
   - Review JAVA programming language
   - Review Object oriented programming
   - Introduce Inheritance, exceptions and recursions
   - Introduce of data structures

ABET Course Syllabus for CS 301: Data Structures

1. Course number and name: CS 301: Data Structures

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Dr. Razvan Andonie

4. Textbook, title, author, and year:
   - Collins, *Data Structures and the Java Collections Framework*, Wiley, 2011

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Introduction to data structures, simple list processing, basic searching and sorting techniques, stacks, queues, and trees.

   5b. Pre-requisites or co-requisites:
   MATH 154, CS 111

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides in introduction to structured programming languages

   6a. Specific outcomes of instruction:
   - The student will apply complexity measures to basic algorithms
   - The student will demonstrate the association between ADT concepts and basic JAVA constructs.
   - The student will design and manipulate basic data structures in JAVA

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.b (reinforced)

7. Brief list of topics covered:
   - Review JAVA and object-oriented programming concepts
   - Introduce algorithm analysis
   - Introduce the java collections framework
   - Introduce recursion
   - Introduce Array-based lists and linked lists
   - Introduce stacks and binary trees
   - Introduce methods of mathematical proofs

ABET Course Syllabus for CS 302: Advanced Data Structures

1. Course number and name: CS 302: Advanced Data Structures

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Dr. Razvan Andonie

4. Textbook, title, author, and year:
   - Collins, *Data Structures and the Java Collections Framework*, Wiley, 2011

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Sequential, random access and indexed file organization; B-trees; external searching and sorting; I/O buffering.

   5b. Pre-requisites or co-requisites:
   MATH 172, CS 301

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides in introduction to structured programming languages

   6a. Specific outcomes of instruction:
   - The student will demonstrate the use of complexity measures.
   - The student will demonstrate an understanding of an abstract data type
   - The student will demonstrate the correct use and application of trees, binary trees, search trees, balanced trees, 2-3 trees, etc.

   6b. Criterion 3 student outcomes addressed by course:
   - 3.a (reinforced), 3.b (reinforced)

7. Brief list of topics covered:
   - Binary Search Trees
   - AVL Trees
   - Decision trees
   - Merge Sort algorithm
   - Quick sort algorithm
   - Tree maps and tree sorts
   - Priority Queues
   - Heap Class and Heap Sort
   - Hashing
   - Graphs and Networks

ABET Course Syllabus for IET 242: Instrumentation

1. Course number and name: IET 242: Instrumentation

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Christopher Hobbs

4. Textbook, title, author, and year:
   - Kuphaldt, *Lessons in Industrial Instrumentation*, 2008-2014

   4a. Other supplemental materials:
   - Manufacturer's data sheets for applicable sensors

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Analysis of instrumentation systems including data collection, transmission and conversion, sensor operation, signal conditioning, and application techniques

   5b. Pre-requisites or co-requisites:
   EET 221

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides an introduction to system instrumentation and graphical programming environments

   6a. Specific outcomes of instruction:
   - The student will use virtual instruments in the LabVIEW environment
   - The student will convert sensor data to a form that is useful to a system operator

   6b. Criterion 3 student outcomes addressed by course:
   - 3.b (introduced)

7. Brief list of topics covered:
   - LabView programming Environment
   - Graphical Programming
   - Sensor Data acquisition
   - Instrument control
   - Sensor Specifications
   - Sensor Applications and operation

ABET Course Syllabus for EET 343: Process Control

1. Course number and name: EET 343: Process Control

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Christopher Hobbs

4. Textbook, title, author, and year:
   - Kuphaldt, *Lessons in Industrial Instrumentation*, Version 2.06, Open Source, 2014

   4a. Other supplemental materials:
   - Access to MATLAB and LABVIEW computer software

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Application of analog and digital controller principles to process control systems

   5b. Pre-requisites or co-requisites:
   EET 324 and IET 242

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a second course in instrumentation and process control

   6a. Specific outcomes of instruction:
   - The student will demonstrate understanding of various control methods including PID modes
   - The student will show an understanding of mathematical models of physical systems in input-output transfer function form
   - The student will analyze simple system response using MATLAB and/or LabVIEW
   - The student will show an understanding of various methods of diagrams to illustrate control systems including block diagrams.
   - The student will be able to algebraically reduce block diagrams and transforms using MATLAB.

   b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Basic feedback control principles
   - Control modes on/off, PID
   - Response Analysis
   - Laplace Transforms
   - State-Space Analysis
   - PID Tuning methods

ABET Course Syllabus for EET 445: Electro-Mechanical Controls

1. Course number and name: EET 445: Electro-Mechanical Controls

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Taiqian Yang

4. Textbook, title, author, and year:
   - Nise, *Control Systems Engineering*, 3rd Edition
   - Franklin, Powell and Workman, *Digital Control of Dynamic Systems*, 3rd Edition, Addison-Wesley Publishing
   - Distifano, Stubberud and Williams, *Feedback and Control Systems,* 2nd Edition, Schaum's Outlines

   4a. Other supplemental materials:
   - Microchip's Reference Publication: www.micro-chip.com

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   A study of the modeling, dynamics and control of electro-mechanical systems

   5b. Pre-requisites or co-requisites:
   EET 343

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides introduces the control of electro-mechanical systems

   6a. Specific outcomes of instruction:
   - The student will learn the basic models of electrical and mechanical systems
   - The student will learn system response to various input signals
   - The student will learn feedback control characteristics and stability
   - The student will learn the fundamentals of root-locus method for control system design.
   - The student will learn the fundamentals of frequency response method for control system design
   - The student will earn the concepts of state space analysis

   6b. Criterion 3 student outcomes addressed by course:
   - 3.d (reinforced)

7. Brief list of topics covered:
   - Introduction to dynamic models
   - Matlab and Simulink
   - Dynamic response
   - Basic properties of electro-mechanical systems

- The Root-locus design method
- The frequency response design method
- State space design

ABET Course Syllabus for EET 332: Generation of Electrical Power

1. Course number and name: EET 332: Generation of Electrical Power

2. Credits and contact hours: 4 credit hours, 4 contact hours per week

3. Instructor's Name: Nathan Davis

4. Textbook, title, author, and year:
   - Wildi, *Electrical Machines, Drives, and Power Systems,* 6th Ed, Prentice Hall, 2006

   4a. Other supplemental materials:
   - N/A

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Introduction to Electro-Mechanical energy conversion and applications to Electrical power generation

   5b. Pre-requisites or co-requisites:
   EET 324

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a second course in instrumentation and process control

   6a. Specific outcomes of instruction:
   - The student will analyze magnetic circuits
   - The student will determine power in single and three phase circuits
   - The student will analyze ideal and practical transformer circuits
   - The student will describe electromagnetic energy conversion
   - The student will analyze DC Motors and Generators
   - The student will analyze single and three phase induction motors

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Introduction to power generation
   - Power in AC Circuits
   - Three phase circuits
   - Magnetic circuits
   - Ideal transformers
   - Practical and special transformers
   - Three phase transformers
   - Three-phase induction machines

ABET Course Syllabus for MATH 172: Calculus I

1. Course number and name: MATH 172: Calculus I

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Thad O'Dell

4. Textbook, title, author, and year:
   - Gleason, McCallum et al., *Calculus; Single & Multivariable*, 6th Edition, Hughes-Hallett

   4a. Other supplemental materials:
   - Graphing Calculator (TI-83/84 Recommended)
   - Access to Webwork. http://webwork.math.cwu.edu/webwork2/Math1720dell/
   - Access to Canvas

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Theory, techniques, and applications of differentiation and integration of the elementary functions

   5b. Pre-requisites or co-requisites:
   MATH 154 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course is a first course in calculus with focus given to limits and differentiation

   6a. Specific outcomes of instruction:
   - The student will investigate limits and continuity of functions
   - The student will use l'Hopital's rule to compute limits
   - The student will compute derivatives using the definition
   - The student will differentiate a variety of functions using the basic differentiation rules
   - The student will use the concept of a derivative of a function to graphically and numerically represent the rate of change of a function.
   - The student will use the first and second derivative to describe the behavior of curves, solve optimization problems, and create complete graphs of functions

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Limits and Continuity
   - The definition of the derivative

- L’Hopital’s rule to compute derivatives
- Graphical representations of limits
- Methods of differentiation (power, product, quotient, chain rules)
- Applications of the derivative to graphing functions
- Applications of the derivative to one-dimensional motion
- Applications of the derivative to optimization problems

ABET Course Syllabus for MATH 173: Calculus II

1. Course number and name: MATH 173: Calculus II

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Danielle Jacobson

4. Textbook, title, author, and year:
   - Gleason, McCallum et al., *Calculus; Single & Multivariable*, 6th Edition, Hughes-Hallett

   4a. Other supplemental materials:
   - Graphing Calculator (TI-83, TI-84, TI-85, TI-89 or other brands with equivalent capabilities)

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Theory, techniques, and applications of differentiation and integration of the elementary functions

   5b. Pre-requisites or co-requisites:
   MATH 172 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Required

6. Specific goals for the course:
   This course is a second course in calculus with focus given to integration

   6a. Specific outcomes of instruction:
   - The student will use Riemann sums to evaluate area
   - The student will use evaluate definite integrals using substitution, integration by parts, and trig substitution.
   - The student will apply the definite integral to problems from geometry, physics, economics, and probability
   - The student will evaluate improper integrals.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Riemann sums
   - The limit of a Riemann Sum
   - The definite and indefinite integral
   - Integration by substitution
   - Integration by parts
   - Trigonometric Substitution
   - Evaluation of improper integrals
   - Applications of integration to geometry, physics, economics and probability

ABET Course Syllabus for MATH 260: Sets and Logic

1. Course number and name: MATH 260: Sets and Logic

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: James D Harper

4. Textbook, title, author, and year:
   - James D Harper, *Logic, Sets and Proof: An Introduction*,

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Essentials of mathematical proofs, including use of quantifiers and principles of valid inference. Set theory as a mathematical system.

   5b. Pre-requisites or co-requisites:
   MATH 173 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course provides the students a solid foundation in logic and mathematical proofs

   6a. Specific outcomes of instruction:
   - The student will write mathematical proofs
   - The student will use fundamental postulates of logic and set theory to formulate mathematical proofs

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Mathematical proofs
   - Inductive proofs
   - Logic
   - Set theory

ABET Course Syllabus for MATH 265: Linear Algebra I

1. Course number and name: MATH 265: Linear Algebra I

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Chris Black

4. Textbook, title, author, and year:
   - Leon, *Linear Algebra, with Applications*, 9th Edition, Pearson

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Vector spaces, linear systems, matrices, and determinants

   5b. Pre-requisites or co-requisites:
   MATH 173 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in linear algebra

   6a. Specific outcomes of instruction:
   - The student will be able to solve a linear system using matrix methods
   - The student will be able to correctly use the specialized vocabulary and notation of linear algebra
   - The student will be able to think abstractly about vector space structures
   - The student will understand the axiomatic structure of vector spaces
   - The student will know how and when to use linear algebraic techniques to model and analyze application problems.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Matrices and systems of equations
   - Vector spaces and subspaces
   - Determinants
   - Linear transformations
   - Eigenvectors and eigenvalues

ABET Course Syllabus for MATH 272: Multivariable Calculus I

1. Course number and name: MATH 272: Multivariable Calculus I

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Jon Fassett

4. Textbook, title, author, and year:
   - *Multivariable Calculus I&2 (CWU Custom)*, Hughes-Hallett

   4a. Other supplemental materials:
   - Graphing calculator (TI-84 Plus recommended)

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Differential and integral calculus of multivariable functions and related topics.

   5b. Pre-requisites or co-requisites:
   MATH 173 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in multi-variable calculus

   6a. Specific outcomes of instruction:
   - The student will be able to compute partial sums
   - The student will be able to identify a geometric series and, if it converges, compute its sum
   - The student will be able to apply various tests for convergence
   - The student will be able to determine the interval of convergence for a power series
   - The student will be able to find the Taylor polynomial of degree *n* and the Taylor series representation for a function
   - The student will be able to differentiate and integrate Taylor series
   - The student will be able to perform algebraic computations involving vectors
   - The student will be able to use the dot and cross product to determine orthogonality, find the equation of a plane, and to compute the area and volume of surfaces and spaces

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Partial sums
   - Convergence
   - Geometric series
   - Taylor series expansion

- Integration and differentiation of Taylor series expansions
- Vectors and vector operations
- Dot and Cross products

ABET Course Syllabus for MATH 311: Statistical Concepts and Methods

1. Course number and name: MATH 311: Statistical Concepts and Methods

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Michael Lundin

4. Textbook, title, author, and year:
   - Moore, McCabe and Craig, *Exploring the Practices of Statistics*, W. H. Freeman, 2012

   4a. Other supplemental materials:
   - Graphing calculator (TI-84 Plus recommended)

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Hands-on activities for exploring data. Surveys, planned experiments, and observational studies. Modeling, sampling distributions, and statistical inference. MINITAB statistical computing language introduced and used extensively.

   5b. Pre-requisites or co-requisites:
   MATH 130 or MATH 173 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in statistics and statistical analysis

   6a. Specific outcomes of instruction:
   - The student will be able to pose and refine research questions
   - The student will be able to use correct statistical models
   - The student will be able to efficiently calculate model statistics by hand or by using a spreadsheet application
   - The student will be able to interpret statistical results
   - The student will be able to communicate research and results succinctly and accurately

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Introduce statistics and statistical analysis
   - Research questions
   - Statistical models
   - Interpretation of statistical results

ABET Course Syllabus for MATH 330: Discrete Mathematics

1. Course number and name: MATH 330: Discrete Mathematics

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Jean Marie Linhart

4. Textbook, title, author, and year:
   - Lehman, Leighton, and Meyer, *Mathematics for Computer Science*, Open source download available at http://webwork.math.cwu.edu/~montgomery/143/330/2013.pdf

   4a. Other supplemental materials:
   - Access to Canvas

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Topics from logic, combinatorics, counting techniques,, graph theory, and theory of finite-state machines.

   5b. Pre-requisites or co-requisites:
   MATH 260 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a second course in mathematical proofs and logic

   6a. Specific outcomes of instruction:
   - The student will be able to formulate mathematical proofs by induction
   - The student will be able to use concepts from number and graph theory in mathematical proofs
   - The students will be able to apply the fundamentals of combinatorics to problems in math, science, engineering and computer science

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Induction Proofs
   - Number Theory
   - Graph Theory
   - Networks
   - Recurrence relations
   - Counting, Cardinality and Combinatorics

ABET Course Syllabus for MATH 376: Differential Equations I

1. Course number and name: MATH 376: Differential Equations I

2. Credits and contact hours: 3 credit hours, 3 hours per week

3. Instructor's Name: Jim Bisgard

4. Textbook, title, author, and year:
   - Noonburg, *Ordinary Differential Equations: From Calculus to Dynamical Systems*, MAA Textbooks

   4a. Other supplemental materials:
   - Access to Canvas

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Elementary methods of solutions of ordinary differential equations. Some numerical methods for solving ordinary differential equations with applications.

   5b. Pre-requisites or co-requisites:
   MATH 265 and MATH 272 with a C or higher

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in ordinary differential equations

   6a. Specific outcomes of instruction:
   - The student will be to solve ordinary differential equations using analytical and numerical methods

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Review of integration and differentiation
   - Applications of the integral as the anti-derivative
   - Introduction solutions to first order differential equations
   - Introduce solutions to second and higher order differential equations

ABET Course Syllabus for PHYS 111: Introductory Physics I

1. Course number and name: PHYS 111: Introductory Physics I

2. Credits and contact hours: 4 credit hours, Online Course

3. Instructor's Name: Bruce Palmquist

4. Textbook, title, author, and year:
   - Urone and Hinrichs *College Physics*, Open Source text available at: https://openstaxcollege.org/textbooks/college-physics.

   4a. Other supplemental materials:
   - Access to Expert TA, a low-cost, fully interactive online learning system
   - eScience physics lab kit

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Topics in physics including kinematics and dynamics. Analyzing physical systems using algebra and trigonometry.

   5b. Pre-requisites or co-requisites:
   MATH 153 (C or higher)

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course introduces the physics to students who have a background in college algebra.

   6a. Specific outcomes of instruction:
   - The student will demonstrate knowledge and understanding of the fundamental concepts in mechanics such as displacement, velocity, acceleration, Newton's Laws of motion, force applications and circular motion
   - The student will demonstrate an ability to effectively apply this knowledge to solving problems.
   - The student will demonstrate enhanced quantitative reasoning skills and mathematical analysis skills.
   - The student will demonstrate through written communication proficiency and prudence in use of the scientific method including designing labs, making hypotheses, and making inferences.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Displacement, velocity, and acceleration
   - Newton's Laws of motion
   - Force

- Circular motion

ABET Course Syllabus for PHYS 112: Introductory Physics II

1. Course number and name: PHYS 112: Introductory Physics II

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Bruce Palmquist

4. Textbook, title, author, and year:
   - Serway and Faughn, *College Physics*

   4a. Other supplemental materials:
   - Scientific Calculator
   - Ruler
   - Protractor
   - Graph-ruled composition book (one per group)

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   An integrated experimental and analytical investigation of topics in rotational dynamics, wave mechanics, and conservation principles. The integrated lecture/laboratory course includes the analysis of physical systems using algebra and trigonometry along with inquiry-based activities and experimental investigation

   5b. Pre-requisites or co-requisites:

   PHYS 111

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Selective Elective

6. Specific goals for the course:

   This course introduces energy conservation and wave mechanics and is a continuation of the introductory physics sequence.

   6a. Specific outcomes of instruction:
   - The student will develop an appreciation of and facility for applications of Newton's Laws, energy conservation and wave mechanics and their consequences for a variety of systems.
   - The student will develop familiarity and facility with some of the analytical approaches that have proven effective in the discipline of physics and in the advance of science.
   - The student will develop understanding of the overall structure of the discipline of physics.
   - The student will develop skills in the oral and written communication of physics concepts.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
    - Motion and energy
    - Rotational Mechanics
    - Heat Energy
    - Wave Mechanics
    - Conservation of Energy

ABET Course Syllabus for PHYS 113: Introductory Physics III

1. Course number and name: PHYS 113: Introductory Physics III

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Bruce Palmquist

4. Textbook, title, author, and year:
   - Serway and Faughn, *College Physics*

   4a. Other supplemental materials:
   - Scientific Calculator
   - Ruler
   - Protractor
   - Graph-ruled composition book (one per group)

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):

   An integrated experimental and analytical investigation of topics in electricity, magnetism, and optics. This integrated lecture/laboratory course includes the analysis of physical systems using algebra and trigonometry along with inquiry-based activities and experimental investigation.

   5b. Pre-requisites or co-requisites:

   PHYS 111

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:

   Selective Elective

6. Specific goals for the course:

   This course introduces energy conservation and wave mechanics and is a continuation of the introductory physics sequence.

   6a. Specific outcomes of instruction:
   - The student will demonstrate knowledge of key ideas associated with the topics listed in the syllabus through oral and written communication
   - The student will demonstrate an understanding of correspondence between physical systems and their mathematical descriptions
   - The student will demonstrate through oral and written communication proficiency and prudence in the use of the scientific method.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
    - Magnetism
    - Electricity
    - Optics

ABET Course Syllabus for PHYS 181: General Physics I

1. Course number and name: PHYS 181: General Physics I

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Darci Snowden

4. Textbook, title, author, and year:
   - Knight, *Physics for Scientists and Engineers*, 3rd Edition

   4a. Other supplemental materials:
   - Mastering Physics Account

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Topics in physics including kinematics and dynamics. Analyzing physical systems using algebra, trigonometry, and calculus.

   5b. Pre-requisites or co-requisites:
   MATH 172

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This is a calculus based course in general physics

   6a. Specific outcomes of instruction:
   - The student will demonstrate knowledge and understanding of the fundamental concepts in mechanics such as kinematics and dynamics (chapters 1-8, 12 in Knight).
   - The student will demonstrate an ability to effectively apply this knowledge in solving problems.
   - The student will demonstrate enhanced quantitative reasoning skills and mathematical analysis skills.
   - The student will demonstrate through oral and written communication proficiency and prudence in the use of the scientific method including designing labs, making hypotheses, and making inferences.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Displacement, velocity, and acceleration
   - Newton's Laws of motion
   - Force
   - Circular motion

ABET Course Syllabus for PHYS 182: General Physics II

1. Course number and name: PHYS 182: General Physics II

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Darci Snowden

4. Textbook, title, author, and year:
   - Knight, *Physics for Scientists and Engineers*, 3rd Edition

   4a. Other supplemental materials:
   - Mastering Physics Account

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   An integrated experimental and analytical investigation of topics in rotational dynamics, wave mechanics, and conservation principles. This integrated lecture/laboratory course includes analysis of physical systems using algebra, trigonometry, and calculus along with inquiry-based activities and experimental investigation.

   5b. Pre-requisites or co-requisites:
   PHYS 181, MATH 173

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This is a second calculus based course in the general physics sequence

   6a. Specific outcomes of instruction:
   - The student will demonstrate knowledge and understanding of important concepts in mechanics, including rotational motion, conservation of momentum and energy, and wave behavior (chapters 9-15 and 20-21 in Knight).
   - The student will demonstrate an ability to effectively apply content knowledge in solving problems.
   - The student will demonstrate quantitative reasoning and critical thinking skills.
   - The student will demonstrate through oral and written communication proficiency and prudence in the use of the scientific method including designing labs, making hypotheses, analyzing physical systems, making inferences and evaluating solutions.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Newton's Laws
   - The relationship between force, work and energy

- Conservation of energy and momentum
- Rotational motion
- Wave motion

ABET Course Syllabus for CHEM 181: General Chemistry I

1. Course number and name: CHEM 181: General Chemistry I

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Tony Brown

4. Textbook, title, author, and year:
   - Tro, *Chemistry: Structure and Properties*, CWU Costume Edition, Pearson, 2015

   4a. Other supplemental materials:
   - Access to MyLab software

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   This course introduces chemistry concepts such as atoms and molecules, stoichiometry, solution chemistry, thermochemistry, electronic structure of the atom and periodicity, and chemical bonding.

   5b. Pre-requisites or co-requisites:
   MATH 153 (recommended)

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in inorganic chemistry

   6a. Specific outcomes of instruction:
   - The student will learn fundamental concepts of inorganic chemistry including stoichiometry, periodicity of elements and chemical bonding.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Introduction to atomic structure
   - Measurement, Problem solving, Units of measure
   - Significant figures and exponential notation
   - The quantum mechanical model of the atom
   - Periodic properties of elements
   - Molecules and compounds
   - Chemical bonding
   - Chemical reactions and chemical quantities

ABET Course Syllabus for PHYS 183: General Physics III

1. Course number and name: PHYS 183: General Physics III

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Darci Snowden

4. Textbook, title, author, and year:
   - Knight, *Physics for Scientists and Engineers*, 3rd Edition

   4a. Other supplemental materials:
   - Mastering Physics Account

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   An integrated experimental and analytical investigation of topics in electricity and magnetism. This integrated lecture/laboratory course includes analysis of physical systems using algebra, trigonometry, and calculus along with inquiry-based activities and experimental investigation.

   5b. Pre-requisites or co-requisites:
   PHYS 181, MATH 173

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This is a third calculus based course in the general physics sequence

   6a. Specific outcomes of instruction:
   - The student will demonstrate knowledge and understanding of important concepts in electricity and magnetism, including properties of charges, the electric properties of materials, charging processes, an atomic-level description of charge, what fields and potentials are and how they are used, and the fundamentals of DC circuits (chapters 25-33 in Knight).
   - The student will demonstrate an ability to effectively apply content knowledge in solving problems.
   - The student will demonstrate quantitative reasoning and critical thinking skills.
   - The student will demonstrate through oral and written communication proficiency and prudence in the use of the scientific method including designing labs, making hypotheses, analyzing physical systems, making inferences and evaluating solutions.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Charge
   - The electric properties of materials

- Charging processes
- An atomic description of charge
- What fields and potentials are
- Fundamentals of DC circuits

ABET Course Syllabus for CS 325: Technical Writing for Computer Science

1. Course number and name: CS 325: Technical Writing for Computer Science

2. Credits and contact hours: 3 credit hours, 3 hours per week

3. Instructor's Name: Lila Harper

4. Textbook, title, author, and year:
   - Brusaw, Alred, and Oliu, *Handbook of Technical Writing*, 10th Edition
   - Zobel, *Writing for Computer Science*, 2nd Edition

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Writing and editing technical materials in computer science.

   5b. Pre-requisites or co-requisites:
   ENG 102 and CS 301

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in technical writing with an emphasis on writing for an audience in computer science

   6a. Specific outcomes of instruction:
   - The student demonstrate an understanding of writing mechanics
   - The student will compose and analyze a research paper, a cover letter, a resume, and a proposal

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Introduction to technical writing
   - Review writing mechanics
   - Introduce analysis techniques
   - Cover letters and resumes
   - Proposals and Annotated bibliographies

ABET Course Syllabus for ENG 310: Technical Writing

1. Course number and name: ENG 310: Technical Writing

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Joshua Welsh

4. Textbook, title, author, and year:
   - Johnson-Sheehan, Richard, *Technical Communication Today*, 5th Edition, Longman, 2014

   4a. Other supplemental materials:
   - N/A

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Practice in writing and editing technical reports

   5b. Pre-requisites or co-requisites:
   ENG 101, ENG 102, and at least junior standing

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in technical writing

   6a. Specific outcomes of instruction:
   - The student will learn basic rhetorical approaches and moves to take with your writing.
   - The student will demonstrate proper mechanical correctness in writing

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Communicating in the technical workplace
   - Letters, Memos, and E-Mail
   - Communicating in a reader-focused way
   - Using plain and persuasive style
   - Analytical reports
   - Proposals
   - Strategic Planning
   - Persuading others

ABET Course Syllabus for COM 207: Introduction to Communication Studies

1. Course number and name: COM 207: Introduction to Communication Studies

2. Credits and contact hours: 5 credit hours, 5 hours per week

3. Instructor's Name: Terri Reddout

4. Textbook, title, author, and year:
   - Tubbs, *Human Communication Principles and Contexts*, 13th Edition, McGraw Hill

   4a. Other supplemental materials:
   - Access to academic library research
   - Certain props to illustrate communication concepts

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Introductory course designed to allow students to develop effective communication skills across a variety of human communication contexts including public speaking, interpersonal relationships, and professional settings.

   5b. Pre-requisites or co-requisites:
   None

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in interpersonal communications

   6a. Specific outcomes of instruction:
   - The student will define and describe the process of human communication
   - The student will develop increased skill in public speaking
   - The student will increase oral communication repertoire in interpersonal contexts
   - The student will increase skill in group problem solving
   - The student will increase knowledge and skill in resolving communication conflicts
   - The student will increase their knowledge and understanding of human communication in order to more efficiently communicate and improve human relationships

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Human communication models
   - Perception and the perception process
   - Language ambiguity

- Gender communication
- Conflict Management
- Introduction to public speaking
- Outlines, attributing sources

ABET Course Syllabus for COM 345: Business and Professional Speaking

1. Course number and name: COM 345: Business and Professional Speaking

2. Credits and contact hours: 4 credit hours, 4 hours per week

3. Instructor's Name: Nadene Vevea

4. Textbook, title, author, and year:
   - Beebe, S.A., & Mottet, T.P., *Business and professional communications: Principles and skills for leadership*, 2nd Edition, Pearson, 2013

   4a. Other supplemental materials:
   - None

5. Specific course information:

   5a. Brief description of the content of the course (catalog description):
   Oral communication in career and professional settings with focus on public presentations, briefings, and persuasion.

   5b. Pre-requisites or co-requisites:
   None

   5c. Required, elective, or selected elective (as per Table 5-1) course in the program:
   Selective Elective

6. Specific goals for the course:
   This course is a first course in interpersonal communications

   6a. Specific outcomes of instruction:
   - The student will demonstrate informative methods by delivering an informative speech.
   - The student will demonstrate persuasive methods by delivering a persuasive speech.

   6b. Criterion 3 student outcomes addressed by course:
   - N/A

7. Brief list of topics covered:
   - Introduction to communication
   - Using verbal and nonverbal messages
   - Listening and responding
   - Adapting to differences
   - Developing and delivering professional presentations
   - Writing for business
   - Informative speech
   - Interview types
   - Persuasive speech

Appendix B – Faculty Vitae

TaiQian Yang
Vita

Education

Washington State University, Pullman, Washington PhD Electrical Engineering	1993
Northwestern Polytechnic University, P.R China Master of Science, Electrical Engineering	1982
Jiaotong University, P.R. China Bachelor of Science, Electrical Engineering	1970

Academic Experience

Central Washington University, Full Professor, Electronic Engineering Technology, Des Moines, Washington Full time	1997 to Present
Northwestern Polytechnic University, Assistant Professor	1982 to 1986

Non-Academic Experience

BaoJi Radio and Digital Equipment, Product Manager, Shaanxi, P.R. China	1977 to 1980
BaoJi radio and Digital Equipment, Production Engineer, Shaanxi, P.R. China	1970 to 1977

Certifications or Professional Registrations

Honors and Awards

Service Activities

IEEE EDUCON Paper Reviewer, 2010
IEEE Region 6 student paper contest Judge
39th ASEE/IEEE Frontiers in Education (FIE) conference paper reviewer, April, 2009

Publications and Presentations

Advanced FPGA Workshop, sponsored by NSF, McMinnville, OR. Oct 5-6, 2012.
Reforming Electric Energy System Curriculum, Napa, CA, Feb 2-5, 2012.
Microchip *15th* Masters Conference & Workshop, Phoenix, AZ, Aug 2011

Pacific Northwest power system symposium on Smart Grid, Seattle, WA, Feb 17-19, 2010.

Professional Development Activities

Lad Holden
Vita

Education

Arizona State University Master of Technology, Computer and Electronic Engineering Technology	August 1994
Central Washington University, Ellensburg, Washington Bachelor of Science, Electronic Engineering Technology	June 1990

Academic Experience

Central Washington University, Associate Professor, Electronic Engineering Technology, Ellensburg, Washington Full time	1994 to Present

Non-Academic Experience

Boeing Commercial Airplane, • , Full time	1990 to 1994

Certifications or Professional Registrations

Honors and Awards

Service Activities

Central Washington University, ETSC Department Chair	2012-Present
Central Washington University, EET Program Coordinator	2006-2012

Publications and Presentations

N. Davis, M. Whelan, C. Pringle, L. Holden. Development of a Programmable Logic Controller Training Unit for Engineering Technology Curriculum. 122nd ASEE Annual Conference and Exposition, Paper ID #11479

Professional Development Activities

Darren C. Olson
Vita

Education

Indiana State University Ph.D. in Technology Management, Quality Systems Specialization	May 2004
Bowling Green State University M. Ed. in Career and Technology Education	May 1997
Brigham Young University B.S. in Mechanical Engineering	April 1991

Academic Experience

Central Washington University, Associate Professor MSET Program Coordinator	2008 – Present
Bemidji State University, Associate Professor, Department Chair, Department of Technological Studies	2002 – 2008
Eastern Kentucky University, Instructor College of Business and Technology	2001 – 2002
Ph.D. Student, Indiana State University	1998 – 2001
ITT Technical Institute, Instructor	1997 – 1998

Non-Academic Experience

Kern Liebers USA, Product Engineer	1994 to 1995
Toledo Molding and Die, Quality Engineer	1993 to 1994
Hansen Machine Corporation, Manufacturing Engineer	1992 to 1993

Certifications or Professional Registrations

Honors and Awards

Service Activities

University Graduate council	2012 – present
Faculty senate	2010 – present

Publications and Presentations

Olson, D. C. (2004). *Assessment of current quality management practices* (Doctoral dissertation, Indiana State University, 2004). Dissertation Abstracts International. (UMI No. 0388150)

Olson, D. C. (2013). *Teaching Students How to Innovate*. In Proceedings Papers. Presented at the ATMAE 2013 Conference: Developing the Future Workforce, New Orleans, LA. In Press.

Olson, D. C., & Sinn, J. W. (1999). An update on Applied Quality Science at Bowling Green State University and the instructional use of student-based applied research as a technology transfer mechanism: A critical element of education for technologists. *Journal of Industrial Technology, 15 (4).*

Ousterhout, J. N., & Olson, D. C. (2013). Power Generation Using Simultaneous Capture of Solar Photovoltaic and Solar Thermal Energy. *Journal of Technology, Management, and Applied Engineering, 29 (2).*

Sinn, J. W., & Olson, D. C. (2001). An Industrial Technologist's Core Knowledge: Web-based Strategy for Defining Our Discipline. *Journal of Industrial Technology, 17 (2).*

Professional Development Activities

Reviewer for the Journal of Technology, Management & Applied Engineering 2014 – Present

Reviewer, ATMAE conference presentation proposals 2013 – Present

ATMAE accreditation (CHEA recognized) visiting team member 2009 – Present

Nathan Davis
Vita

Education

University of Idaho, Moscow, Idaho Master of Science, Electrical Engineering	August, 2016 (In Progress)
Boise State University, Boise, Idaho Master of Art, Curriculum and Instruction	May, 2006
Boise State University, Boise, Idaho Bachelor of Science, Mathematics	December, 2005
DeVry Institute of Technology, Kansas City, Missouri Bachelor of Science, Electronic Engineering Technology	February, 1996

Academic Experience

Central Washington University, Assistant Professor, Program Coordinator, Electronic Engineering Technology, Ellensburg, Washington, Full time — 2011 to Present

Salina Area Technical College, Instructor, Program Coordinator, Electronic Engineering Technology, Salina, Kansas, Full time — 2009 to 2011

Non-Academic Experience

KLA-Tencor Corporation, Senior Field Service Engineer, — 1997 to 2003

- Provided on-site service and application support for customer owned capital equipment, Full time

KLA-Tencor Corporation, Associate Test Engineer, — 1996 to 1997

- Performed final system testing and qualification of semiconductor capital equipment, Full time

Kansas Army National Guard, Fire Direction Specialist — 1992 to 1998

- Served as fire direction specialist for field artillery unit, Honorable Discharge, Part time

Certifications or Professional Registrations

License: Engineer in Training (EIT) — 2012
State: WA, License Number: 32483

Honors and Awards

Recognition of Outstanding Teaching, Engineering Technology, Safety, and Construction Department, College of Education and Professional Studies, 2012, 2014

Service Activities

Central Washington University, EET Program Coordinator	2012-Present
Central Washington University, IEEE Student Chapter Advisor	2011-Present
Central Washington University, Retention Taskforce Committee Member	2012-Present
Central Washington University, ETSC Department Member Search Committee Member	2014-2015
Central Washington University, Graduate Faculty Committee member	2012-Present
Kittitas County Fair, Volunteer	2012-2014

Publications and Presentations

N. Davis, M. Whelan, C. Pringle, R. Beardsley. Northwest Regional Smart Grid Demonstration Project. Symposium on Undergraduate Research and Creative Expression**,** Central Washington University, May 2012 (Presentation)

D. Olson, N. Davis. Development of an Interdisciplinary Lab Module. 2012 ATMAE Conference Proceedings, Page 31, October 2012 (Presentation)

C. Johnson, C. Pringle, N. Davis. Measuring the Impact of Internships on Design Skills using a Materials Activity. 2013 ASEE Conference Proceedings, T550, June 2013

N. Davis, M. Whelan, C. Pringle, L. Holden. Development of a Programmable Logic Controller Training Unit for Engineering Technology Curriculum. 122nd ASEE Annual Conference and Exposition, Paper ID #11479

Professional Development Activities

University of Idaho, Moscow, Idaho	August, 2016
Master of Science, Electrical Engineering	(In Progress)

Christopher Hobbs
Vita

Education

Central Washington University, Ellensburg, Washington — 2013
Master of Science Engineering Technology

Central Washington University, Ellensburg, Washington — 2009
Bachelor of Science Electronics Engineering Technology

Academic Experience

Central Washington University, Lecturer, Electronic Engineering Technology, Ellensburg, Washington, Part time — 2013 to Present

Central Washington University, Graduate Teaching Assistant, Electronic Engineering Technology, Ellensburg, Washington, Part time — 2009-2013

Non-Academic Experience

Current Products Repair, Repair Technician, — 1996-Present
- Control and operate all aspects of sole-proprietor business repairing a wide variety of electronic devices, Full time

Central Washington University, Computer Support Analyst, — 1989-1996
- Develop and manage desktop computing support center, Full time

Boeing Computer Services, Computing Telecommunications Service Analyst — 1984-1989
- Test and repair network communications equipment

Certifications or Professional Registrations

License: FCC Radio Service HA - Amateur — 2002
FRN: 0007014574

Honors and Awards

Valedictorian, Central Washington University, College of Education and Professional Studies, 2009

Service Activities

Amateur Radio Emergency Radio Volunteer — 2002-Present

Publications and Presentations

C. Hobbs. Measuring the Dielectric Absorption Properties of Film Capacitors. Presented in fulfillment of graduation requirements

Professional Development Activities

Fundamentals of Engineering Preparation

Name: **MICHAEL L. WHELAN**

Education:

Doctor of Philosophy (Engineering Valuation) - Iowa State University (May, 1981)
Master of Science (Construction Management) - University of New Mexico (May, 1971)
Bachelor of Science in Civil Engineering - University of New Mexico (January, 1970)

Academic Experience:

Associate Professor, Construction Management Program, Department of Engineering Technologies, Safety, & Construction, Central Washington University (Sep, 2007 – Present); Department Chair (Jun, 2009 – Feb, 2012)

Visiting Professor, Department of Building Construction Management, University of North Florida (Jan, 2006 – May, 2007)

Associate Professor of Construction Engineering Technology (CET), Department of Civil Engineering, Montana State University; Program Coordinator, CET, and Assistant Department Head, Department of Civil Engineering (Jan, 2000 – July, 2005)

Associate Professor of Construction, Department of Construction, Arizona State University, Tempe, AZ (on leave of absence from the University of Wyoming); Coordinator, Graduate Program (January – August, 1991)

Visiting researcher, U.S. Army Construction Engineering Research Laboratory, Champaign, IL (sabbatical leave from the University of Wyoming) (September, 1988 – August, 1989)

Associate Professor of Civil Engineering, Department of Civil and Architectural Engineering, University of Wyoming, Laramie, WY (July, 1980 – Jan, 2000); Coordinator, Construction Engineering Option (July, 1980 – Jun, 1988)

Instructor and Assistant Professor of Construction Engineering, Department of Civil Engineering, Iowa State University, Ames, IA (November, 1974 – July, 1980)

Non-Academic Experience:

Residential contractor, Bozeman, MT (President, Aardvark Construction Company, Inc.) (May, 2004 – December, 2005)

Slipform Inspector, Todd and Sargent, Inc., Ames, IA (July, 1981 & July, 1982)

Field Engineer, J. P. Cullen and Sons, Inc., Janesville, WI (June – August, 1975)

Estimator, Field Engineer, and Office Engineer, Hunt Building Corporation, El Paso, TX (August, 1971 – November, 1974)

Publications:

Rajendran, Sathy, Brian Clarke, and Michael L. Whelan, "Contract Issues and Construction Safety Management," Professional Safety, Journal of the American Society of Safety Engineers, Vol. 58, No. 9. (September, 2013).

Bender, W., Plugge, P. W., and Whelan, M. L., "Sustainable Design Strategies That Succeed II," International Proceedings of the Associated Schools of Construction of the 49th Conference, San Luis Obispo, CA (April, 2013).

Stephens, J., Whelan, M., and Johnson, D., "Use of Performance Based Warranties on Roadway Construction Projects", technical report prepared for the State of Montana Department of Transportation Research Bureau, (November, 2002)

Whelan, M., Knoll, P., Jost, D., and Rabern, D., "Outcome Assessment of Construction Engineering Technology Programs Using the Constructor Qualification Examination Level I," Proceedings of the Pacific Northwest Region Meeting, ASEE, Bozeman, MT (May, 2000).

Presentations:

Whelan, Michael L., "Hydraulic Excavators vs. Frontend Loaders: Battle of the Earthmovers," 2012 ATMAE Annual Conference, Nashville, TN (November, 2012).

Whelan, Michael L., "A Construction Bidding Simulation: Tips About Variations That Work and Variations That Don't," 2012 ATMAE Annual Conference, Nashville, TN (November, 2012).

Johnson, C., Whelan, M., and Pringle, C., "Engineering Project Management and Entrepreneurship in Mechanical Engineering Technology," 2012 Pacific Northwest – ASEE Section Meeting (PNW-ASEE), Portland, OR (August, 2012).

Davis, N., Pringle, C., Beardsley, R., and Whelan, M., "Ellensburg Renewable Energy Park Project: What Becomes of All That Data Generated by the Smart-Grid Research Project?," SOURCE 2012, Central Washington University (May, 2012).

Fuhrman, Darryl and Whelan, Michael L., "The Ellensburg Renewable Energy Park: A Proposed Display of Renewable Energy Technologies for Public Education," SOURCE 2012, Central Washington University, Ellensburg, WA (May, 2012).

Olson, Darren and Whelan, Michael L., "Delivering a Master of Science Program in Engineering Technology to Cohorts of Chinese Nationals: An Analysis of the Challenges, the Benefits, and the Pursuit of Continuous Improvement," 2011 ATMAE Annual Conference, Cleveland, OH (November, 2011).

Whelan, Michael L., "Frontend Loader vs. Hydraulic Excavator: Battle of the Earthmovers," SOURCE 2011, Central Washington University (May, 2011).

Whelan, Michael L. and Cattin, William, "Acid Test: Detecting One Student's Dishonest Submittal of Another's Work," SOURCE 2011, Central Washington University, Ellensburg, WA (May, 2011).

Professional Development Activities:

Professional Engineer Registration: P.E. 3819 Wyoming (inactive),
P.E. 8388 Iowa (Civil) (inactive)

Professional Affiliations:

Washington Society of Professional Engineers Education Foundation Board of Trustees (2012 – present) (Secretary, 2014 – present)
Association of Technology, Management, and Applied Engineering (2011-13)
American Society of Engineering Educators (1998-2004, 2015-present)
American Society of Civil Engineers (1987-2004)

Partial List of National Level Technical Meeting Attendance/Participation:

ATMAE Annual Conferences (2011 & 2012)
ABET Annual Conference (2011)
NAHB Annual Convention (2011)
"Developing Wind Power in the Northwest", The Seminar Group (2010)
American Council for Construction Education Annual Convention (2008, 09, 14)
ABET Assessment Workshop (Lake Tahoe, NV – 2007)

Appendix C – Equipment

Des Moines Lab

Hardware:

Quantity	Item
11	BK Precision Triple Output Power Supply Model 1672
11	BK Precision Function Generator Model 4011A
11	Instek GDS-2102 Oscilloscope
8	NI ELVIS/PCI-6251 Bundle
4	NI ELVIS II Bundle
15	FLUKE 83II Digital Multi-Meters
10	Fluke 8010A DMM
10	Wiegman Automation Direct PL 250 PLC Trainers

Software:

NI LabVIEW
MultiSim
Matlab
Automation Direct PLC software

Ellensburg Labs

Hardware:

Quantity	Item
34	NI ELVIS II Bundle
24	Tektronix DPO2012 Digital Phosphor Oscilloscope
10	Tektronix TDS210 Oscilloscope
30	Tektronix AFG3021B Arbitrary/Function Generator
40	Tektronix DMM4020 Benchtop Multimeter
45	Tektronix PWS4305 Programmable DC Power Supply
18	Tektronix PSW2326 DC Power Supply
18	NI CompactDAQ Chassis cDAQ-9174
18	NI Analog Voltage Input Module NI-9205
18	NI Analog Voltage/Current Input Module NI-9207
18	NI Digital Input/Output Module NI-9403
10	NI RTD Module
10	NI Thermocouple Module
32	Microchip Explorer 16 Programming Kits
24	Microchip picDEM Mechatronics Kits
25	Microchip ICD3 Programmer
20	Allen-Bradley PLC Units

Software:

NI LabVIEW
MultiSim
Matlab

Rockwell Automation Studio 5000
RobotC VEX software
LEGO Mindstorms

Other available test equipment

Quantity	Item
1	RIXAN M6-BCM Robotics Training Module w/Mitsubishi 6-Axis Robot
8	VEX Robotics Kits
8	Lego Mindstorms NXT Kits
10	NI compactRIO Chassis NI-9076
10	NI PS-15 Power Supply
3	Microchip MCHV picDEM Development Board
10	Fluke 8010A DMM
10	FLUKE 83II/73II DMM
3	Lecroy WaveSurfer 422
10	BK Precision 3011B Function Generator
1	Sorenson XPF-60-20D Dual Output DC Power Supply
1	Sencore LC53 Z-Meter
4	Fluke 40 Power Harmonic Meters
1	Fluke 39 Power Meter
6	Fluke 610 LAN Cable Mappers
3	Fluke Hydra Data Systems
1	Fluke Networks Intellitone Pro
1	Fluke Helios System
2	Fluke 9010A Micro System Troubleshooter
4	Fluke 7250A Counter/Timers
1	Fluke 7105A Calibration System
40	Spare Fluke Hand Held Multi-meters
3	Wavetek Lantek Pro LAN tester
1	Philips PM 5193 Programmable Synthesizer/Function Generator
1	Philips PM 6304 programmable RCL meter
2	Tektronix Logic Analyzers
1	Tektronix Transistor Curve Tracer
5	Atlas II programmable Robot Arm
1	Rhino XR-Series Robot
1	HUNTTRON Tracker/System Troubleshooter
1	hp 18180A PROTOCAL Analyzer
1	ED-SET Mark 1A Microwave Test Set
2	Hampen AC/DC Motor/Generator & Motor Control Systems
1	Electronic Training Materials, Inc Series 1200 Motor Control Trainers

Appendix D – Institutional Summary

The Institution

a. Name of Institution: Central Washington University

b. Chief Executive Officer: Dr. James Gaudino, President

c. Self Study Report Submitted by:
Lad Holden, Department Chair holdenl@cwu.edu
Engineering Technologies, Safety & Construction Department

d. Accrediting Organizations:
Northwest Commission on Colleges and Universities (NWCCU, Jan 10, 2010)
Information accessed at cwu.edu/associate-provost/nwccu-accreditation

Individual programs also have accreditations, such as ABET for the MET and EET program (2009), and ACCE for Construction Management (2015)

1. Type of Control

CWU is a public institution established by the State of Washington in 1889 as the State Normal School. It is overseen by a Board of Directors appointed by the Governor of the State of Washington. The Board of Directors select the President. The Washington State Higher Education Coordination Board (HEC Board) oversees planning for new academic programs and capital budgets (ie, funding of building construction).

2. Educational Unit

The Mechanical Engineering Technology program is administered within the Engineering Technologies, Safety and Construction Department (ETSC), within the College of Education and Professional Studies (CEPS), one of four colleges in Central Washington University.

University President: Dr. James Gaudino
University Provost: Dr. Marilyn Levine
Dean of CEPS: Dr. Paul Ballard (replaced Dr. Connie Lambert April 2015)
ETSC Department Head: Mr. Lad Holden
MET Program Co-coordinators: Mr. Lad Holden

3. Academic Support Units

Chemistry Department: Dr. Levente Fabry-Asztalos

Communications Dept Head: Dr. Marji Morgan (interim chair)
English Department Head: Dr. George Drake
Math Department Head: Dr. Aaron Montgomery
Physics Department Head: Dr. Andy Piacsek

4. Non-academic Support Units

Career Services: Vicki Sannuto, Director
Information Services: Andreas Bohman, AVP, Chief Information Officer
Library: Dr. Patricia J Cutright, Dean, James L Brooks Library
(includes Learning Commons; Math 7 writing tutoring etc)
CWU Foundation: Scott Wade, Executive Director

5. Credit Unit

CWU is on the quarter system, 10 weeks of classes per quarter, with a total of between 51 and 53 instructional days each quarter including 4 days of finals. One credit represents one lecture hour or two laboratory hours per week, along with the resulting time outside of class required to complete assignments. One academic year consists of three academic quarters; 156 total days including 144 class days (28.8 weeks) and 12 days of finals, exclusive of summer quarter offerings. Summer quarter has 6 week and 9 week sessions. Details are available in the CWU Academic Calendar available on the Registrar web page.

6. Tables

Complete the following tables for the program undergoing evaluation.

Table D-1. Program Enrollment and Degree Data

Electronics Engineering Technology

Academic Year		Enrollment Year					Total Undergrad	Total Grad	Degrees Awarded			
		1st	2nd	3rd	4th	5th			Associates	Bachelors	Masters	Doctorates
Current Year	FT	0	1	18	12	6	37	0	0		0	0
	PT	0	0	2	3	2	7	0				
2013-14	FT	1	2	20	9	4	36	0	0	14	0	0
	PT	0	0	4	2	1	7	0				
2012-13	FT	0	1	15	6	4	26	0	0	14	0	0
	PT	0	0	2	1	3	6	0				
2011-12	FT	0	0	15	5	5	25	0	0	13	0	0
	PT	0	0	0	1	1	2	0				
2010-11	FT	0	1	6	7	6	20	0	0	14	0	0
	PT	0	0	7	3	2	12	0				

Give official fall term enrollment figures (head count) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years. The "current" year means the academic year preceding the fall visit.

FT--full time
PT--part time

Table D-2. Personnel

Electronic Engineering Technology

Year[1]: 2014-2015

	HEAD COUNT		FTE
	FT	PT	
Administrative[2]	1		0.6
Faculty (tenure-track) [3]	4		2.1
Other Faculty (excluding student Assistants)		1	0.5
Student Teaching Assistants[4]	1		1
Technicians/Specialists	2		1
Office/Clerical Employees	1		1
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 Bachelor of Science in Electronics Engineering Technology 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.*

Dr. Paul Ballard
Dean's Name (As indicated on the RFE)

Signature

6.29.15
Date