

**Assessment Plan for TAC of ABET  
Electrical and Computer Engineering Technology  
Department of Engineering & Technology  
Kimmel School  
Western Carolina University  
(Updated – June 5, 2008)**

**Introduction**

The TAC of ABET General Criteria for Accrediting Engineering Technology Programs lists nine criterion that must be met:

- Criterion 1 Students
- Criterion 2 Program Educational Objectives
- Criterion 3 Program Outcomes
- Criterion 4 Continuous Improvement
- Criterion 5 Curriculum
- Criterion 6 Faculty
- Criterion 7 Facilities
- Criterion 8 Support
- Criterion 9 Program Criteria

The heart of the Assessment Plan includes criteria 2 through 4 and in the case of the ECET program, criterion 9. Criteria 1, and 5 through 8 very much reflect reportable data regarding program support and will be included in the Self-Study Questionnaire.

**ECET Mission Statement**

The mission of the Electrical and Computer Engineering Technology program is to provide students a scholarly community in which to study and prepare for a productive career. To fulfill this goal, the program contains a strong mathematics and sciences component which is integrated into the engineering technology aspect of the curriculum. The ECET program supports the University's mission as an economically-engaged university in responding to regional needs and opportunities with graduates capable of being immediately productive.

**ECET Program Operational Philosophy**

The program emphasizes the application of microcomputers to the solution of industrial problems relating to automation, instrumentation, and control, in systems involving robotics, data communications, networks, and/or automated testing. In all cases, microcomputer hardware and software are used for data acquisition, transfer, and analysis.

Appendix A displays a four-year course plan for the ECET program.

## **Part I – Applicable TAC of ABET Accreditation Criteria**

### **Criterion 2. Program Educational Objectives**

As defined by ABET, Program Educational Objectives are *broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.*

Each program must have in place:

- a. published educational objectives that are consistent with the mission of the institution and applicable ABET criteria,
- b. a documented process by which the program educational objectives are determined and periodically evaluated based on the needs of constituencies served by the program, and
- c. an educational program, including a curriculum, that enables graduates to achieve the program educational objectives.

### **Criterion 3. Program Outcomes (a-k)**

As defined by ABET, Program Outcomes are *narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.*

Each program must demonstrate that graduates have:

- a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines.
- b. an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology.
- c. an ability to conduct, analyze and interpret experiments, and apply experimental results to improve processes.
- d. an ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives.
- e. an ability to function effectively on teams.
- f. an ability to identify, analyze and solve technical problems.
- g. an ability to communicate effectively.
- h. a recognition of the need for, and an ability to engage in lifelong learning.
- 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.
- k. a commitment to quality, timeliness, and continuous improvement.

#### **Criterion 4. Continuous Improvement**

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 of program educational objectives and program outcomes must be used to effect continuous improvement of the program through a documented plan.

#### **Criterion 9. Program Criteria**

Where applicable, each program must satisfy program criteria that amplify these general criteria and provide the specifics needed for a given discipline. A program must satisfy all program criteria applicable to the technical specialties implied in the program title.

##### **Electrical/Electronics(s) Engineering Technology (EET) Program Criteria Outcomes**

Graduates of baccalaureate 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 to the building, testing, operation, and maintenance of electrical/electronics(s) systems.
- b. the applications of physics or chemistry to electrical/electronics(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.
- 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.

##### **Computer Engineering Technology (CET) Program Criteria Outcomes**

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

- a. the application of electric circuits, computer programming, associated software applications, analog and digital electronics, microcomputers, operating systems, and local area networks to the building, testing, operation, and maintenance of computer systems and associated software systems.
- b. the applications of physics or chemistry to computer systems in a rigorous mathematical environment at or above the level of algebra and trigonometry.

- c. the ability to analyze, design, and implement hardware and software computer systems.
- d. the ability to apply project management techniques to computer systems.
- e. the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of computer systems and networks.

## **Part II – WCU ECET Program Objectives and Outcomes**

### **Program Educational Objectives**

1. Assume entry-level positions in system design, development, and implementation related to electrical and computer systems.
2. Apply current industrial practices and design procedures in support of electrical and computer systems.
3. Pursue appropriate career advancement, promotion and occupational mobility.
4. Pursue additional education and/or on-the-job training and certification.

### **Program Outcomes with Performance Criteria**

1. Analyze and interpret experimental data and apply it in a practical manner in the design and development of electrical and computer systems.
  - a. Demonstrate proper use of laboratory equipment.
  - b. Build and test circuits and/or systems.
  - c. Analyze and interpret experimental data in laboratory settings.
  - d. Record and present experimental data in appropriate formats.
  - e. Apply appropriate design concepts to electrical and computer systems.
2. Apply current technical information, circuit simulation software, and appropriate mathematics to identify, analyze, and solve technical problems associated with electrical and computer systems.
  - a. Solve electrical circuits problems fundamental to electrical and computer systems.
  - b. Demonstrate the application of appropriate software to solve technical problems.
  - c. Demonstrate the application of mathematics in solving technical problems.
  - d. Solve technical problems given a set of specifications.
  - e. Solve open-ended technical problems.
  - f. Resource applicable technical information.
3. Apply project management fundamentals with a commitment to quality, timeliness and continuous improvement in electrical and computer systems design and development.
  - a. Demonstrate fundamental project management techniques.
  - b. Discuss the basic principles of quality assurance and continuous improvement.
  - c. Demonstrate appropriate team skills.

4. Communicate technical information clearly and concisely.
  - a. Present oral reports.
  - b. Produce written technical reports.
  
5. Exhibit knowledge necessary for career advancement in engineering/technical professions.
  - a. Discuss the need and nature of lifelong learning.
  - b. Discuss professional, ethical and social issues related to the workplace.
  - c. Recognize and describe several challenges when working in a diverse team environment.
  - d. Describe several issues related to technology and society that are of a global nature.

### **Part III – WCU ECET Program Assessment Maps**

There are two sets of outcomes for the ECET program which must be considered. The first set of outcomes is the Program Outcomes with Performance Criteria which are integral to the assessment process. It is the Performance Criteria which will be assessed, thereby reflecting the fulfillment of the ECET Program Outcomes.

In addition to developing ECET Program Outcomes and Program Educational Objectives, TAC of ABET requires evidence showing the relationship between the program outcomes and program objectives. ABET also requires evidence to show how the ECET Program Outcomes encompass and relate to the outcome requirements of Criterion 3 (a-k).

Table 1 shows a mapping of ECET Program Outcomes Performance Criteria and Program Educational Objectives to TAC of ABET Criterion 3 (a-k).

**Table 1. ECET Program Outcomes and Objectives Mapped to ABET (a-k) Outcomes**

<b>Program Educational Objectives</b>	<b>Program Outcomes Performance Criteria</b>	<b>ABET Criterion 3 Outcome</b>
1, 2 1, 2 1, 2 1, 2 1, 2 1, 2 1, 2 1, 2, 3 1, 2, 4 2, 3 2, 3	1a. Demonstrate proper use of laboratory equipment. 1b. Build and test circuits and/or systems. 1e. Apply appropriate design concepts to electrical and computer systems. 2a. Solve electrical circuits problems fundamental to electrical and computer systems. 2b. Demonstrate the application of appropriate software to solve technical problems. 2c. Demonstrate the application of mathematics in solving technical problems. 2d. Solve technical problems given a set of specifications. 2e. Solve open-ended technical problems. 2f. Resource applicable technical information. 3a. Demonstrate fundamental project management techniques. 3b. Discuss the basic principles of quality assurance and continuous improvement.	<b>a</b>
1, 2 1, 2, 3 1, 2, 4 3, 4	1e. Apply appropriate design concepts to electrical and computer systems. 2e. Solve open-ended technical problems. 2f. Resource applicable technical information. 5a. Discuss the need and nature of lifelong learning.	<b>b</b>
1, 2 1, 2 1, 2 1, 2 2, 3	1a. Demonstrate proper use of laboratory equipment. 1b. Build and test circuits and/or systems. 1c. Analyze and interpret experimental data in laboratory settings. 1d. Record and present experimental data in appropriate formats. 3b. Discuss the basic principles of quality assurance and continuous improvement.	<b>c</b>
1, 2 1, 2 1, 2 1, 2, 3 1, 2, 4	1e. Apply appropriate design concepts to electrical and computer systems. 2b. Demonstrate the application of appropriate software to solve technical problems. 2c. Demonstrate the application of mathematics in solving technical problems. 2e. Solve open-ended technical problems. 2f. Resource applicable technical information.	<b>d</b>
2, 3 2, 3 3, 4 3, 4	3a. Demonstrate fundamental project management techniques. 3c. Demonstrate appropriate team skills. 5b. Discuss professional, ethical and social issues related to the workplace. 5c. Recognize and describe several challenges when working in a diverse team environment.	<b>e</b>

1, 2	2a. Solve electrical circuits problems fundamental to electrical and computer systems.	<b>f</b>
1, 2	2b. Demonstrate the application of appropriate software to solve technical problems.	
1, 2	2c. Demonstrate the application of mathematics in solving technical problems.	
1, 2	2d. Solve technical problems given a set of specifications.	
1, 2, 3	2e. Solve open-ended technical problems.	
1, 2, 4	2f. Resource applicable technical information.	
1, 2	1d. Record and present experimental data in appropriate formats.	<b>g</b>
1, 3, 4	4a. Present oral reports.	
1, 3, 4	4b. Produce written technical reports.	<b>h</b>
3, 4	5a. Discuss the need and nature of lifelong learning.	
3, 4	5d. Describe several issues related to technology and society that are of a global nature.	<b>i</b>
3, 4	5b. Discuss professional, ethical and social issues related to the workplace.	
3, 4	5d. Describe several issues related to technology and society that are of a global nature.	<b>j</b>
3, 4	5b. Discuss professional, ethical and social issues related to the workplace.	
3, 4	5c. Recognize and describe several challenges when working in a diverse team environment.	
3, 4	5d. Describe several issues related to technology and society that are of a global nature.	<b>k</b>
2, 3	3a. Demonstrate fundamental project management techniques.	
2, 3	3b. Discuss the basic principles of quality assurance and continuous improvement.	
3, 4	5d. Describe several issues related to technology and society that are of a global nature.	

Since the ECET program contains both EET and CET course content, a second set of outcomes representing both areas must be taken into consideration. The EET and CET Program Criteria Outcomes must be met through the curriculum, i.e., the required content must be included in courses within the program. Each course in the curriculum must be related to the EET and CET Program Criteria Outcomes. Course mapping to fulfill these requirements is shown in Table 2 and Table 3.

**Table 2. EET Program Criteria Outcomes Course Mapping**

Demonstrate knowledge and hands-on competence appropriate to the goals of the program in:	ECET														TEL	
	2 1 1	2 3 1	2 4 2	2 9 0	3 2 1	3 3 1	3 3 2	3 4 1	4 3 1	4 5 2	4 6 1	4 6 4	4 7 8	4 7 9	3 1 2	3 4 5
a.1. the application of circuit analysis and design to the building, testing, operation, and maintenance of electrical/electronics(s) systems.	X	X	X		X	X		X				X				
a.2. the application of computer programming to the building, testing, operation, and maintenance of electrical/electronics(s) systems.			X				X		X	X	X	X				
a.3. the application of associated software to the building, testing, operation, and maintenance of electrical/electronics(s) systems.	X	X	X		X	X	X			X	X				X	X
a.4. the application of analog and digital electronics to the building, testing, operation, and maintenance of electrical/electronics(s) systems.		X	X	X	X	X	X			X		X			X	
a.5. the application of microcomputers to the building, testing, operation, and maintenance of electrical/electronics(s) systems.						X	X		X			X				
b. the applications of physics or chemistry to electrical/electronics(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.			X									X				
c.1. the ability to analyze, design, and implement <i>control systems</i> .										X			X	X		
c.2. the ability to analyze, design and implement <i>instrumentation systems</i> .							X		X			X	X	X		
c.3. the ability to analyze, design and implement <i>communications systems</i> .													X	X	X	X
d. the ability to apply project management techniques to electrical/electronics(s) systems.													X	X		
e. the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronics(s) systems.								X		X	X				X	

**Table 3. CET Program Criteria Outcomes Course Mapping**

Demonstrate knowledge and hands-on competence appropriate to the goals of the program in:	ECET														TEL	
	2 1 1	2 3 1	2 4 2	2 9 0	3 2 1	3 3 1	3 3 2	3 4 1	4 3 1	4 5 2	4 6 1	4 6 4	4 7 8	4 7 9	3 1 2	3 4 5
a.1. the application of electric circuits to the building, testing, operation, and maintenance of computer systems and associated software systems.						X	X		X			X				X
a.2. the application of computer programming to the building, testing, operation, and maintenance of computer systems and associated software systems.							X		X		X	X				
a.3. the application of associated software applications to the building, testing, operation, and maintenance of computer systems and associated software systems.			X	X		X	X				X	X				X
a.4. the application of analog and digital electronics to the building, testing, operation and maintenance of computer systems and associated software systems.			X			X	X		X	X		X				
a.5. the application of microcomputers to the building, testing, operation, and maintenance of computer systems and associated software systems.				X		X	X		X			X				
a.6. the application of operating systems to the building, testing, operation, and maintenance of computer systems and associated software systems.				X			X		X							
a.7. the application of local area networks to the building, testing, operation, and maintenance of computer systems and associated software systems.				X												X
b. the applications of physics or chemistry to electrical/electronics(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.			X									X				
c. the ability to analyze, design, and implement hardware and software computer systems.				X			X		X			X	X	X		X
d. the ability to apply project management techniques to computer systems.													X	X		
e. the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of computer systems and networks.								X		X	X					

To strengthen the relationships among the TAC of ABET (a-k) outcomes, the EET and CET Program Criteria Outcomes and the WCU ECET Program Outcomes with Performance Criteria, Course Learning Objectives have been developed for each course. These objectives reflect the intent of the outcomes and are embedded in the course material and listed in course outlines. The ECET Course Learning Objectives are listed in Appendix B. Sample assessment forms are displayed in Appendix E and are used to “track” components of the assessment process.

The ECET program assessment focuses primarily on the courses in the major. However, it is fair to say that all the courses in the curriculum, in some fashion, contribute to the career success of the graduate. To acknowledge this support from courses in the non-technical area, Appendix A includes a mapping of the curriculum to the WCU ECET program outcomes.

**Part IV – ECET Assessment Planning**

As defined by ABET, Assessment is *one or more processes that identify, collect, and prepare data to evaluate the achievement of program outcomes and program educational objectives.*

Table 4 provides time lines for the assessment of program educational objectives. An alumni survey and an employer survey will gather information to assess the effectiveness of program outcomes as related to program educational objectives.

**Table 4. Time Lines for Assessment of Program Educational Objectives**

<b>Program Educational Objectives</b>	<b>Spring 2009</b>	<b>Spring 2011</b>	<b>Spring 2013</b>
1. Assume entry-level positions in system design, development, and implementation related to electrical and computer systems.	X	X	X
2. Apply current industrial practices and design procedures in support of electrical and computer systems.	X	X	X
3. Pursue appropriate career advancement, promotion and occupational mobility.	X	X	X
4. Pursue additional education and/or on-the-job training and certification.	X	X	X

Table 5 displays time lines for the assessment of WCU ECET Program Outcomes. Performance Criteria are assessed on a three-year rotation.

Detailed Assessment Planning Matrices are displayed in Appendix C. These matrices display the targeted courses used for assessment of performance criteria, the nature of the assessment activity, and the assessment method to be used for the performance criteria. Each performance criteria is assessed at three different points in the curriculum.

**Table 5. Time Lines for Assessment of WCU ECET Program Outcomes**

<b>WCU ECET Program Outcomes</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
PO1. Analyze and interpret experimental data and apply it in a practical manner in the design and development of electrical and computer systems.	<b>Five Performance Criteria</b>			<b>Five Performance Criteria</b>		
PO4. Communicate technical information clearly and concisely.	<b>Two Performance Criteria</b>			<b>Two Performance Criteria</b>		
PO2. Apply current technical information, circuit simulation software, and appropriate mathematics to identify, analyze, and solve technical problems associated with electrical and computer systems.		<b>Six Performance Criteria</b>			<b>Six Performance Criteria</b>	
PO3. Apply project management fundamentals with a commitment to quality, timeliness and continuous improvement in electrical and computer systems design and development.		<b>Three Performance Criteria</b>			<b>Three Performance Criteria</b>	
PO5. Exhibit knowledge necessary for career advancement in engineering/technical professions.			<b>Four Performance Criteria</b>			<b>Four Performance Criteria</b>

## Part V – ECET Evaluation Planning and Implementation

As defined by ABET, Evaluation is *one or more processes for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes or program educational objectives are being achieved, and results in decisions and actions to improve the program.*

Evaluation of the assessment data for the objectives and outcomes must include input from the program constituencies:

- ECET Faculty
- ECET Students
- ECET Alumni
- ECET Employers
- ECET Advisory Board
- Engineering & Technology Department Head

Data is gathered from graduating senior exit surveys, alumni surveys, employer surveys, and assessment of performance criteria and program educational objectives. Review of the data takes place annually involving faculty, advisory board, the ET Department Head and the Assessment Director. The results of the evaluation are summarized and fed back into the program to document the continuous improvement process.

Table 6 summarizes responsibility for assessment and evaluation activities. Detailed time lines for evaluation processes are presented in Appendix D.

**Table 6. Assessment and Evaluation Activity Responsibilities**

<b>Assessment and Evaluation Activity</b>	<b>Responsibility</b>
Data Collection and Evaluation; Determine Findings	ECET Faculty; Department Head; Assessment Director
Initiate Action Where Necessary	ECET Faculty
Review Program Outcomes, Performance Criteria and Program Educational Objectives	ECET Faculty; Advisory Board; Department Head; Assessment Director
Determine Targeted Courses, Assessment Activities & Methods	ECET Faculty; Department Head; Assessment Director
Develop/Review Assessment Methods	ECET Faculty; Advisory Board; Department Head; Assessment Director
Continuous Summary of Assessment/Evaluation Activities and Results	Department Head; Assessment Director

## **Appendix A**

### **ECET Four-Year Course Plan**

#### **Mapping the Curriculum to Program Outcomes**

**Western Carolina University  
Electrical and Computer Engineering Technology**

<b>Suggested Course Plan</b>			
<b>Fall Semester</b>	<b>Hours</b>	<b>Spring Semester</b>	<b>Hours</b>
C1 ENGL 101 Composition I Perspective	3 3	C1 ENGL 102 Composition II C3 CMCH 201 Intro. Speech Comm.	3 3
C4 Health & Wellness First Year Seminar Perspective	3 3 3	C2 MATH 146 Precalculus Perspective Perspective	4 3 3
	15		16
<b>Fall Semester</b>		<b>Spring Semester</b>	
ECET 231 Circuit Analysis I C5 PHYS 130 Physics I CS 140 Problem Solving/Programming Perspective C5 Elective	4 4 3 3 3	ECET 290 Computer Engineering Fundamentals ECET 242 Electronic Circuits Perspective PHYS 131 Physics II MATH 170 Statistics	3 4 3 4 3
	17		17
<b>Fall Semester</b>		<b>Spring Semester</b>	
ECET 331 Digital Integrated Circuits ECET 321 Circuit Analysis II TEL 345 Introduction to LAN's MATH 153 Calculus I	4 4 4 4	ECET 332 Microcontrollers TEL 312 Electronic Communications MATH 255 Calculus II ECET 341 Advanced Circuit Analysis	4 4 4 3
	16		15
<b>Fall Semester</b>		<b>Spring Semester</b>	
ECET 431 Microprocessor Interfacing ECET 452 Control Systems ECET 478 Senior Project Proposal Technical Elective Elective Elective	4 4 1 2 3 3	ECET 461 Digital Signal Processing ECET 464 Instrumentation ECET 479 Senior Project Perspective Technical Elective	3 4 3 3 3
	17		16

**Western Carolina University**  
**Electrical and Computer Engineering Technology**

**Mapping the Curriculum to the Program Outcomes**

Semester	Course Number	Course Title	Program Outcomes				
			1	2	3	4	5
<b>1<sup>st</sup> Semester (15 hours)</b>	ENGL 101	Composition I .....				X	X
	Health & Wellness	Liberal Studies .....				X	X
	First Year Seminar	Liberal Studies .....				X	X
	Perspective	Liberal Studies .....				X	X
	Perspective	Liberal Studies .....				X	X
<b>2<sup>nd</sup> Semester (16 hours)</b>	ENGL 102	Composition II .....				X	X
	CMCH 201	Introduction to Speech Communication .....				X	X
	MATH 146	Precalculus .....	X	X			
	Perspective	Liberal Studies .....				X	X
	Perspective	Liberal Studies .....				X	X
<b>3<sup>rd</sup> Semester (17 hours)</b>	ECET 231	Circuit Analysis I .....	X	X		X	
	CS 140	Problem Solving & Programming .....	X	X			
	PHY 130	Introductory Physics I .....	X	X		X	
	C5 Elective	CHEM 139 General Chemistry – Recommended .....	X	X		X	
	Elective	Elective .....	X	X			
<b>4<sup>th</sup> Semester (17 hours)</b>	ECET 290	Computer Engineering Fundamentals .....	X	X		X	
	ECET 242	Electronics Circuits .....	X	X	X	X	
	MATH 170	Statistics .....	X	X			
	PHYS 131	Introductory Physics II .....	X	X		X	
	Perspective	Liberal Studies .....				X	X
<b>5<sup>th</sup> Semester (16 hours)</b>	ECET 331	Digital Integrated Circuits .....	X	X		X	
	ECET 321	Circuit Analysis II .....	X	X		X	
	TEL 345	Introduction to LANs .....	X	X	X	X	
	MATH 153	Calculus I .....	X	X			
<b>6<sup>th</sup> Semester (17 hours)</b>	ECET 332	Microcontrollers .....	X	X		X	
	ECET 341	Advanced Circuit Analysis .....	X	X			
	TEL 312	Electronic Communication Fundamentals (Recommended)	X	X		X	
	MATH 255	Calculus II .....	X	X			
<b>7<sup>th</sup> Semester (17 hours)</b>	ECET 431	Microprocessor Interfacing .....	X	X	X		
	ECET 452	Control Systems .....	X	X			
	ECT 478	Senior Project Proposal .....	X	X	X	X	X
	Technical Elective	Technical Elective .....	X	X		X	
	Technical Elective	Technical Elective .....	X	X		X	
<b>8<sup>th</sup> Semester (16 hours)</b>	ECET 461	Digital Signal Processing .....	X	X	X	X	
	ECET 464	Instrumentation .....	X	X		X	
	ECET 479	Senior Project .....	X	X	X	X	X
	Technical Elective	Technical Elective .....	X	X		X	
	Perspective	Liberal Studies .....				X	X

**Appendix B**  
**ECET Course Learning Objectives**

## ECET Course Learning Objectives

*Upon completion of this course, the student will be able to accomplish the following:*

<b>ECET 211 Electronic Drafting &amp; Fabrication</b>	<ol style="list-style-type: none"> <li>1. Identify electronic components and component packages common to circuit fabrication.</li> <li>2. Perform the various skills and methods of electronics project prototyping, such as breadboarding, point-to-point soldering, wire wrapping, and printed circuit board design and fabrication.</li> <li>3. Create electronic prototypes using computer-based tools for schematic capture and layout of printed circuit boards.</li> <li>4. Utilize laboratory instruments and equipment to build and test breadboarded and printed circuit boards.</li> </ol>
<b>ECET 231 Circuit Analysis</b>	<ol style="list-style-type: none"> <li>1. State the basic theories of electricity, passive electrical component behaviors, and DC and AC circuit phenomena.</li> <li>2. Characterize the behavior of voltage and current sources, resistors, capacitors, and inductors.</li> <li>3. Apply knowledge of theories, component behaviors and appropriate software to solve technical problems in DC and AC circuit analysis.</li> <li>4. Utilize laboratory instruments and equipment to perform basic measurements for the analysis and assembly of electrical circuits.</li> <li>5. Write effective technical laboratory reports.</li> </ol>
<b>ECET 242 Electronic Circuits</b>	<ol style="list-style-type: none"> <li>1. Utilize laboratory instruments and equipment to perform basic measurements for the analysis and assembly of electronic circuits.</li> <li>2. Understand the physical phenomena of semiconductor devices including the p-n junction, barrier potential, saturation current and avalanche breakdown.</li> <li>3. Describe the basic operation of semiconductor devices including diodes, transistors and operational amplifiers.</li> <li>4. Glean relevant information from manufacturer data sheets of semiconductor devices and select appropriate devices for a particular set of design specifications.</li> <li>5. Analyze, simulate, design, build and test diode circuits, DC transistor circuits, AC small signal models of transistor amplifiers and several basic operational amplifier circuits.</li> <li>6. Write effective technical laboratory reports.</li> </ol>

<p style="text-align: center;"><b>ECET 290 Computer Engineering Fundamentals</b></p>	<ol style="list-style-type: none"> <li>1. Identify and describe all components in digital computer systems.</li> <li>2. Demonstrate operation of command line and graphical operating systems.</li> <li>3. Master basic binary math computation and ASCII code translation.</li> <li>4. Develop shell scripts to automate high level computer tasks.</li> <li>5. Describe the difference between machine, assembly, high level, and graphical programming environments.</li> <li>6. Create a computer system design which involves simple storage, communication, calculation, networking, and user interface requirements.</li> </ol>
<p style="text-align: center;"><b>ECET 321 Circuit Analysis II</b></p>	<ol style="list-style-type: none"> <li>1. Apply knowledge of theories, component behaviors and appropriate software to solve technical problems in AC circuit analysis including Kirchhoff's current and voltage laws, using complex algebra and Fourier series.</li> <li>2. Characterize the behavior of voltage and current sources, resistors, capacitors, inductors, and operational amplifiers in time domain and frequency domain.</li> <li>3. Utilize laboratory instruments and equipment to perform basic measurements for the analysis and assembly of electrical circuits.</li> <li>4. Analyze and design band pass, band reject, low pass, and high pass filters.</li> <li>5. Write effective technical laboratory reports.</li> </ol>
<p style="text-align: center;"><b>ECET 331 Digital Circuits</b></p>	<ol style="list-style-type: none"> <li>1. State the basic concepts of number systems, Boolean algebra, combinatorial and sequential logic circuits and their applications to digital systems.</li> <li>2. Design, write, simulate and verify digital circuits using a HDL and supporting applications.</li> <li>3. Design and construct digital circuit prototypes using discrete components. Port HDL-based designs to programmable logic devices and validate their behavior in a hardware environment.</li> <li>4. Write effective technical laboratory reports.</li> </ol>
<p style="text-align: center;"><b>ECET 332 Microcontrollers</b></p>	<ol style="list-style-type: none"> <li>1. Identify and operate the parts of a microcontroller and differentiate between microcontroller and microprocessor.</li> <li>2. Write programs in assembler and use the development environment to solve basic problems using microcontrollers.</li> <li>3. Identify assembler directives and opcodes and translate from machine code to assembler manually.</li> <li>4. Identify communication devices and protocols used by microcontrollers.</li> </ol>

<p style="text-align: center;"><b>ECET 332</b> <b>Microcontrollers</b></p>	<p>5. Design microcontroller-based applications using flow charts and hardware block diagrams.</p> <p>6. Utilize laboratory instruments and equipment to implement basic microcontroller-based computer systems.</p>
<p style="text-align: center;"><b>ECET 341</b> <b>Advanced Circuit Analysis</b></p>	<p>1. Perform circuit analysis based on the mathematical and physical forms of common waveforms found in systems along with the response of circuit components to such waveforms.</p> <p>2. Deduce the transient response and steady state response of passive components.</p> <p>3. Apply Laplace transforms to the analysis of electrical circuits.</p>
<p style="text-align: center;"><b>ECET 431</b> <b>Microprocessor Interfacing</b></p>	<p>1. Use external components to expand and interface to microcontrollers or microprocessors, to create automated mixed signal systems.</p> <p>2. Create interrupt driven program solutions to problems, including RTOS.</p> <p>3. Program in C language to solve problems using embedded controllers.</p> <p>4. Design a complete embedded system for a problem of interest.</p> <p>5. Utilize laboratory instruments and equipment to implement advanced microprocessor or microcontroller-based computer systems.</p>
<p style="text-align: center;"><b>ECET 452</b> <b>Control Systems</b></p>	<p>1. Understand fundamentals of control system theory and system parameters.</p> <p>2. Apply Laplace transform techniques to the analysis of and design of a variety of continuous-time control systems.</p> <p>3. Mathematically design proportional, integral, and derivative controllers given a set of system criteria.</p> <p>4. Write computer programs for the simulation of control system performance.</p> <p>5. Analyze, design, and test operational amplifier circuits used in control systems.</p>
<p style="text-align: center;"><b>ECET 461</b> <b>Digital Signal Processing</b></p>	<p>1. Understand linear time invariant systems and discrete time signals.</p> <p>2. Apply transform methods such as DTFT, DFT, and ZT to the analysis of discrete time signals and systems.</p> <p>3. Perform the analysis, design, and computer simulation of FIR and IIR digital filters.</p> <p>4. Understand basic designs of digital filters and fluency in using Matlab.</p>

<p align="center"><b>ECET 461</b> <b>Digital Signal Processing</b></p>	<p>5. Prepare a formal report of an experiment and present the findings orally.</p>
<p align="center"><b>ECET 464</b> <b>Instrumentation</b></p>	<ol style="list-style-type: none"> <li>1. Characterize ideal and non-ideal sensors for computer instrumentation systems.</li> <li>2. Analyze non-ideal op amp circuits for amplification and filtering.</li> <li>3. Characterize non-ideal A/D converters.</li> <li>4. Analyze optical components with regard to sensing transducer applications.</li> <li>5. Develop test software using graphical programming environments.</li> <li>6. Utilize laboratory instruments and equipment to implement advanced PC-based computer systems.</li> </ol>
<p align="center"><b>ECET 478</b> <b>Senior Design Project Proposal</b></p>	<ol style="list-style-type: none"> <li>1. Define a systems level project incorporating appropriate research methods, prior course material, and an analysis of necessary resources.</li> <li>2. Incorporate fundamental elements of project management, including milestones, time lines, resource allocation, budget analysis, and success criteria.</li> <li>3. Prepare and present a formal oral report of design project proposal.</li> <li>4. Prepare a written technical report of design project proposal.</li> <li>5. Effectively collaborate with other class members or outside vendors.</li> </ol>
<p align="center"><b>ECET 479</b> <b>Senior Design Project</b></p>	<ol style="list-style-type: none"> <li>1. Analyze, design, and implement proposed project.</li> <li>2. Apply fundamental elements of project management, including milestones, time lines, resource allocation, budget analysis, and success criteria.</li> <li>3. Effectively collaborate with other class members or outside vendors.</li> <li>4. Prepare a written technical report of design project and results.</li> <li>5. Prepare and present a formal oral report of design project and results.</li> </ol>
<p align="center"><b>TEL 312</b> <b>Electronic Communications Fundamentals</b></p>	<ol style="list-style-type: none"> <li>1. Understand and apply basic communications concepts such as signal representation, spectral analysis, signal to noise ratio, modulation and demodulation.</li> <li>2. Design and implement communication systems using mixers, local oscillators, filters and amplifiers.</li> <li>3. Apply software tools to the design and simulation of communication systems.</li> </ol>

<p style="text-align: center;"><b>TEL 312</b> <b>Electronic Communications</b> <b>Fundamentals</b></p>	<p>4. Apply Fourier Series and Fourier Transforms for analysis of communication signals.</p> <p>5. Utilize laboratory instruments and equipment to implement communication systems.</p> <p>6. Prepare written formal reports of the design, analysis and implementation of communication systems.</p> <p>7. Understand and discuss government regulations regarding the transmission of communication signals.</p>
<p style="text-align: center;"><b>TEL 345</b> <b>Introduction to Local</b> <b>Area Networks</b></p>	<p>1. Design and implement local area networks to specified operational criteria.</p> <p>2. Apply software tools to the design and operation of computer-based networks.</p> <p>3. Analyze various computer network data structures.</p> <p>4. In a laboratory setting, utilize hubs, bridges, routers, and switches to implement local area networks.</p> <p>5. Prepare written formal reports of the design, analysis and implementation of local area networks.</p>

## **Appendix C**

### **ECET Assessment Planning Matrices**

**(2007-2010)**

**Western Carolina University  
Electrical and Computer Engineering Technology**

**Assessment Planning Matrices for 2007-08**

**Program Outcome 1:** Analyze and interpret experimental data and apply it in a practical manner in the design and development of electrical and computer systems.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Targeted Courses</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Frequency</b>	<b>Assessment Responsibility</b>
1.a. Demonstrate proper use of laboratory equipment	a, c	ECET 242 TEL 345 ECET 479	Laboratory Performance Exam Laboratory Experiment Equipment Use Demonstration	Performance Appraisal Rubric-Equipment Use Observation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
1.b. Build and test circuits and/or systems.	a, c	ECET 231 ECET 331 ECET 332	Voltage Divider Two-Bit Adder Interrupts	Rubric Rubric Rubric	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
1.c. Analyze and interpret experimental data in laboratory settings.	c	ECET 231 ECET 331 ECET 332	Lab Report- Analysis Section Lab Report- Analysis Section Lab Report- Analysis Section	Analysis Evaluation Analysis Evaluation Analysis Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
1.d. Record and present experimental data in appropriate formats.	c, g	ECET 231 ECET 331 ECET 332	Lab Report-Data Display/Format Lab Report-Data Display/Format Lab Report-Data Display/Format	Data Evaluation Data Evaluation Data Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
1.e. Apply appropriate design concepts to electrical and computer systems.	a, b, d	ECET 431 TEL 312 ECET 452	Design Project Systems Design Project Controller Design	Written Report Project Evaluation Design Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty

**Program Outcome 4:** Communicate technical information clearly and concisely.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Targeted Courses</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Frequency</b>	<b>Assessment Responsibility</b>
4.a. Present oral reports.	g	ECET 341 ECET 478 ECET 479	Problem Solutions Senior Project Proposal Senior Project	Oral Presentation Oral Presentation Oral Presentation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
4.b. Produce written technical reports.	g	ECET 341 ECET 478 ECET 479	Problem Solutions Senior Project Proposal Senior Project	Written Report Written Report Written Report	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty

**Western Carolina University**  
**Electrical and Computer Engineering Technology**

**Assessment Planning Matrices for 2008-09**

**Program Outcome 2:** Apply current technical information, circuit simulation software, and appropriate mathematics to identify, analyze, and solve technical problems associated with electrical and computer systems.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Targeted Courses</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Frequency</b>	<b>Assessment Responsibility</b>
2.a. Solve electrical circuits problems fundamental to electrical and computer systems.	a, f	ECET 321 ECET 341 ECET 464	Problem Solutions Problem Solutions Design Project	Local Examination Local Examination Project Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
2.b. Demonstrate the application of appropriate software to solve technical problems.	a, d, f	ECET 321 ECET 461 TEL 312	Pspice Application Matlab Application Matlab Application	Application Evaluation Application Evaluation Application Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
2.c. Demonstrate the application of mathematics in solving technical problems.	a, d, f	ECET 341 ECET 461 TEL 312	Problem Solutions Transforms Application Transforms Application	Local Examination Local Examination Local Examination	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
2.d. Solve technical problems given a set of specifications.	a, f	ECET 331 ECET 431 ECET 464	Laboratory Project Laboratory Project Laboratory Project	Project Evaluation Project Evaluation Project Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
2.e. Solve open-ended technical problems.	a, b, d, f	ECET 452 ECET 479 TEL 345	Design Projects Design Projects Design Projects	Design Evaluation Design Evaluation Design Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
2.f. Resource applicable technical information.	a, b, d, f	ECET 331 ECET 332 ECET 461	Component Listing Component Listing Component Listing	Written Report Written Report Written Report	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty

**Program Outcome 3:** Apply project management fundamentals with a commitment to quality, timeliness and continuous improvement in electrical and computer systems design and development.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Targeted Courses</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Frequency</b>	<b>Assessment Responsibility</b>
3.a. Demonstrate fundamental project management techniques.	a, e, k	ECET 332 ECET 478 ECET 479	Develop Gantt Chart Develop Gantt Chart Develop Gantt Chart	Application Evaluation Application Evaluation Application Evaluation	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
3.b. Discuss the basic principles of quality assurance and continuous improvement.	a, e, k	ECET 464 ECET 478 ECET 479	Design Project Senior Project Proposal Senior Project	Written Report Written Report Written Report	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty
3.c. Demonstrate appropriate team skills.	e	ECET 479 TEL 312 TEL 345	Senior Project Team Project Team Project	Rubric-Teaming Rubric-Teaming Rubric-Teaming	3 Year Intervals 3 Year Intervals 3 Year Intervals	Course Faculty Course Faculty Course Faculty

**Western Carolina University  
Electrical and Computer Engineering Technology**

**Assessment Planning Matrices for 2009-10**

**Program Outcome 5:** Exhibit knowledge necessary for career advancement in engineering/technical professions.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Targeted Courses</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Frequency</b>	<b>Assessment Responsibility</b>
5.a. Discuss the need and nature of lifelong learning.	h	ECET 290 ECET 478 TEL 345	Readings & Research Readings & Research Readings & Research	Written Report Written Report Written Report	3Year Intervals 3 Year Intervals 3Year Intervals	Course Faculty Course Faculty Course Faculty
5.b. Discuss professional, ethical and social issues related to the workplace.	e, i, j	ECET 290 ECET 478 ECET 479	Readings & Research Readings & Research Readings & Research	Written Report Oral Presentation Oral Presentation	3Year Intervals 3Year Intervals 3Year Intervals	Course Faculty Course Faculty Course Faculty
5.c. Recognize and describe several challenges when working in a diverse team environment.	e, j	ECET 290 ECET 478 ECET 479	Readings & Research Senior Project Proposal Senior Project	Written Report Oral Presentation Oral Presentation	3 Year Intervals 3Year Intervals 3Year Intervals	Course Faculty Course Faculty Course Faculty
5.d. Describe several issues related to technology and society that are of a global nature.	h, i, j, k	ECET 290 ECET 478 TEL 345	Readings & Research Senior Project Proposal Senior Project	Oral Presentation Written Report Written Report	3Year Intervals 3Year Intervals 3Year Intervals	Course Faculty Course Faculty Course Faculty

## **Appendix D**

### **ECET Evaluation Processes**

*(As defined by ABET, Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes or program educational objectives are being achieved, and results in decisions and actions to improve the program.)*

**Evaluation Processes**  
**Electrical and Computer Engineering Technology**

**Program Outcome 1:** Analyze and interpret experimental data and apply it in a practical manner in the design and development of electrical and computer systems.

**Program Outcome 4:** Communicate technical information clearly and concisely.

Evaluation Activities	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Data Collection	x			x			x		
Data Evaluation		x			x			x	
Report Findings		x			x			x	
Initiate Action, if Necessary		x			x			x	
Review/Modify Performance Criteria		x			x			x	
Determine Targeted Courses			x			x			x
Determine Assessment Activities			x			x			x
Develop/Review Assessment Methods			x			x			x
Summarize Evaluation Information	x	x	x	x	x	x	x	x	x

**Evaluation Processes**  
**Electrical and Computer Engineering Technology**

**Program Outcome 2:** Apply current technical information, circuit simulation software, and appropriate mathematics to identify, analyze, and solve technical problems associate with electrical and computer systems.

**Program Outcome 3:** Apply project management fundamentals with a commitment to quality, timeliness and continuous improvement in electrical and computer systems design and development.

Evaluation Activities	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
<b>Data Collection</b>		x			x			x	
<b>Data Evaluation</b>			x			x			x
<b>Report Findings</b>			x			x			x
<b>Initiate Action, if Necessary</b>			x			x			x
<b>Review/Modify Performance Criteria</b>			x			x			x
<b>Determine Targeted Courses</b>	x			x			x		
<b>Determine Assessment Activities</b>	x			x			x		
<b>Develop/Review Assessment Methods</b>	x			x			x		
<b>Summarize Evaluation Information</b>	x	x	x	x	x	x	x	x	x

**Evaluation Processes**  
**Electrical and Computer Engineering Technology**

**Program Outcome 5:** Exhibit knowledge necessary for career advancement in engineering/technical professions.

<b>Evaluation Activities</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>
<b>Data Collection</b>			x			x			x
<b>Data Evaluation</b>	x			x			x		
<b>Report Findings</b>	x			x			x		
<b>Initiate Action, if Necessary</b>	x			x			x		
<b>Review/Modify Performance Criteria</b>	x			x			x		
<b>Determine Targeted Courses</b>		x			x			x	
<b>Determine Assessment Activities</b>		x			x			x	
<b>Develop/Review Assessment Methods</b>		x			x			x	
<b>Summarize Evaluation Information</b>	x	x	x	x	x	x	x	x	x

**Evaluation Processes**  
**Electrical and Computer Engineering Technology**

**Program Educational Objectives**  
**Alumni Survey**  
**Employer Survey**

<b>Evaluation Activities</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>
<b>Data Collection</b>	x		x		x		x		x
<b>Data Evaluation</b>	x		x		x		x		x
<b>Report Findings</b>	x		x		x		x		x
<b>Initiate Action, if Necessary</b>	x		x		x		x		x
<b>Review/Modify PEOs, if Necessary</b>		x		x		x		x	
<b>Review/Modify Assessment Process</b>		x		x		x		x	
<b>Summarize Evaluation Information</b>	x	x	x	x	x	x	x	x	x

**Evaluation Processes**  
**Electrical and Computer Engineering Technology**

**Graduating Senior Exit Survey**

<b>Evaluation Activities</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>
<b>Data Collection</b>	x	x	x	x	x	x	x	x	x
<b>Data Evaluation</b>	x	x	x	x	x	x	x	x	x
<b>Report Findings</b>	x		x		x		x		x
<b>Initiate Action, if Necessary</b>	x		x		x		x		x
<b>Review/Modify Assessment Process</b>		x		x		x		x	
<b>Summarize Evaluation Information</b>	x	x	x	x	x	x	x	x	x

**Appendix E**

**ECET Program Outcomes Assessment Forms  
(Samples)**

**Guidelines  
for  
ECET/EE Program Outcomes Assessment Forms**

- Program Outcome (x)**                      *The Program Outcomes are listed in the Assessment Planning Matrices for 2007-08. Insert the Program Outcome number in place of the 'x'. Type in the Program Outcome here.*
- Performance Criteria (xx):**            *For either EE or ECET, insert the Performance Criteria number associated with the planned assessment and type in the performance criteria here.*
- ABET Criterion (x):**                      *This refers to the a-k criterion associated with either TAC or EAC ABET accreditation. This can be found in the column titled MAP a-k on the 2007-08 Assessment Planning Matrices. There may be more than one a-k criterion. For example, you may see "a, c". List both letters in place of the 'x' and type both criterion here. The actual criterion can be found on page 3 of the assessment plans.*
- Course Information:**                      *Include course number and title, semester and year.*
- Course Learning Objective:**            *Select the most appropriate Course Learning Objective for the Program Outcome and Performance Criteria. In the selection of the CLO, the performance criteria should be closely related to the CLO and in fact, the performance criteria may be one aspect of the CLO.*
- Assessment Activity:**                      *Briefly describe the assessment activity, e.g., examination question, design project, data analysis, lab performance exam, problem solutions, etc. Many of these are listed on the Assessment Planning Matrices. Be sure to provide sufficient information so that this activity can be located within the course material.*
- Assessment Method/Tool:**                *Briefly state the nature of the assessment method, e.g., rubric, written report, oral report, analysis of data, etc. Many of these are listed on the Assessment Planning Matrices. A copy of the assessment tool should be submitted with the completed assessment form.*
- Assessment Results:**                      *State the results of the assessment process; be specific with regard to data results. Indicate the number of students involved. Your assessment method should contain measurement criteria. This is the place to address the level of achievement for these criteria.*
- Recommendation(s) or  
Conclusions:**                                *Based on the results, list your recommendations or conclusions regarding the assessment of the particular performance criteria.*

.....  
A copy of the assessment activity with assessment method/criteria to be attached to this form.

**Western Carolina University  
Electrical and Computer Engineering Technology  
Assessment Results-Spring 2008  
(Sample)**

**Program Outcome 4:** Communicate technical information clearly and concisely.

<b>Performance Criteria</b>	<b>MAP a-k</b>	<b>Course &amp; Instructor</b>	<b>Assessment Activity</b>	<b>Assessment Method</b>	<b>Assessment Semester</b>	<b>Assessment Results</b>
4.a. Present oral reports	g	Course #1		PO 4.a. Rubric		<i>From the data generated, indicate how many students were exceptional, proficient, marginal, or unsatisfactory.</i>
4.a. Present oral reports	g	Course #2		PO 4.a. Rubric		
4.a. Present oral reports	g	Course #3		PO 4.a. Rubric		

**Program Outcome 4.a. Summary Statement of Assessment Results:**

<p><b>Summary of Results:</b></p> <p><b>Course #1: Recommendations:</b></p> <p><b>Course #2: Recommendations:</b></p> <p><b>Course #3: Recommendations:</b></p>
---

