

**Electromechanical Engineering Technology (BS)  
Assessment and Continuous Improvement Plan  
Updated September 25, 2007**

**Table of Contents**

<b>Electromechanical Engineering Technology (EMET) Constituents .....</b>	<b>1</b>
<b>Overview of Assessment and Continuous Improvement Process: .....</b>	<b>1</b>
<b>Responsibilities for Assessment and Continuous Improvement: .....</b>	<b>1</b>
<b>Assessment of EMET Program Objectives: .....</b>	<b>2</b>
<b>Assessment of EMET Program Outcomes: .....</b>	<b>3</b>
<b>Assessment Tools Utilized by the ENT Department: .....</b>	<b>3</b>
<b>EMET Outcomes Corresponding to TAC/ABET Criteria .....</b>	<b>4</b>
<b>Matching Outcomes to Meet EMET B.S. Objectives: .....</b>	<b>6</b>
<b>EMET Continuous Improvement Plan .....</b>	<b>9</b>
<b>Developing EMET Action Items for Continuous Improvement.....</b>	<b>9</b>
<b>Summary of EMET Assessment:.....</b>	<b>10</b>
<b>EMET Rubrics .....</b>	<b>11</b>

The Electro-Mechanical Engineering Technology (EMET) assessment plan is a subset of the departmental assessment plan. See the department plan for additional details and background information. (Note: In this and other documents, reference to EMET may include “concentration” or “program”. We use these terms interchangeably.)

**Electromechanical Engineering Technology (EMET) Constituents**

EMET constituents are:

- Local place bound students and distance students with associate degrees in electrical, mechanical, electro-mechanical and similarly titled programs
- Local and state industry
- Advisory Council
- TAC/ABET accrediting agency
- Graduate schools
- K-12 and Tech Prep

**Overview of Assessment and Continuous Improvement Process:**

The process used to establish and review the program objectives and outcomes, to evaluate assessment data, and to decide changes necessary for program improvement center around the continuous assessment of specific key courses within the EMET curriculum. Each of these courses is assessed every time the course is offered utilizing all or some of the course assessment tools listed below. The EMET faculty meet on a regular basis (2 or 3 times each academic term) to review course assessment data and plan changes deemed necessary for program improvement. Minutes from these meetings are provided within the EMET assessment note book.

**Responsibilities for Assessment and Continuous Improvement:**

The following individuals are directly involved with and responsible for assessment and continuous improvement:

Dave Hergert (Program coordinator)  
Mysore Narayanan (shared with MET)  
Rob Speckert (Program co-coordinator)  
Roger Seifried

Each faculty member is responsible for conducting the assessment of his/her course and for keeping other faculty members well informed about assessment results and outcomes. The program coordinator collects the assessment data for the EMET courses and uses the data during our regular assessment/continuous improvement meetings.

### **Assessment of EMET Program Objectives:**

EMET program produces graduates who meet departmental objectives and program specific objectives.

Departmental Objectives:

- Apply math and physics principles to the solution of engineering technical problems.
- Use applied skills to identify, evaluate, and solve complex technical problems.
- Use engineering computer software to facilitate engineering problem solving.
- Function effectively in team-oriented activities.
- Demonstrate the knowledge of expected standards of ethical and professional conduct.
- Verbally communicate ideas.
- Prepare well-written technical reports.

In addition, our graduates will have the necessary fundamentals to pursue life-long learning.

Program-specific objectives for students who are graduates of the EMET concentration.

- Apply theoretical knowledge to solve engineering technology problems associated with electromechanical systems and controls.
- Apply modern electromechanical software and technology.

Departmental and program-specific objectives are assessed by the department. The details of this portion of the EMET plan are included in the department plan.

Program-specific objectives for students entering the B.S. EMET concentration.

- Use computer-aided drafting or design tools to prepare graphical representations of electrical and mechanical systems.
- Use circuit analysis, analog and digital electronics, and computers to aid in characterization, analysis, and troubleshooting of electromechanical systems.
- Use statics, strength of materials, and engineering materials, to aid in the characterization, analysis, and troubleshooting of electromechanical systems.
- Use appropriate computer programming languages that could be applied to operating electromechanical systems.

These entry level objectives are monitored by the program faculty and are validated through student performance in courses that utilize these subjects. If students are found to be deficient in their understanding of these subjects, the program coordinator and/or faculty work with individual students to remedy their deficiency. This may include additional assignments, recommending a tutor, or retaking selected courses. We also identify any systemic concerns to participating college partners for immediate action.

In addition, the State of Ohio has active panels of faculty who review and approve technology and general education courses for transfer between state colleges. This ongoing articulation and transfer work has greatly improved the consistency of learning outcomes expected and required for transfer.

The performance of students from each college is used to inform our partner colleges about their graduates and any changes that might be needed. We have numerous examples in our EMET assessment notebook where our feedback led to program changes at partner colleges and/or in the EMET program which resulted in improvement in student performance. We are very satisfied with the close working relationship we have with our college partners.

#### **Assessment of EMET Program Outcomes:**

Outcomes assessment occurs mainly at the course level. Each faculty member is responsible for conducting the assessment of his/her course and for keeping other faculty members well informed about assessment results and outcomes. The assessment data comes from all or some of the following: SEAS course evaluations; Program Outcomes Verification form completed for each course; pre and/or post tests; course notebooks; and senior design judge evaluations. The program coordinator is responsible for collecting the data from each faculty member and summarizing this information into a report. This report is shared with the faculty and the entire department. This report includes a plan of action items that reflects what, who, when, and why. Changes made are tracked and verified for improvement.

#### **Assessment Tools Utilized by the ENT Department:**

The following assessment tools are used by the department and EMET.

- A. Portfolios—these are our TAC/ABET course notebooks.
  - A.1. Student tests and exams
  - A.2. Student reports
  - A.3. Student presentations
- B. Program Outcomes Verification form (formerly Instructor course evaluation form)
- C. Graduate and Alumni surveys
- D. Graduating seniors exit interview/survey
- E. SEAS student evaluation form
- F. Employer survey
- G. Pre and Post Test (no longer active)
- H. Judge's evaluation in ENT 498

Of the tools listed, EMET makes specific use of the following:

- **Graduating seniors exit interview/survey** administered in ENT 498. Used to assess all outcomes and set a baseline for objectives assessment.
- **Graduate and Alumni Survey administered** annually to selected graduates and every 5 years to all graduates.
- **Program Outcomes (Course) Verification Form** prepared every semester by faculty teaching selected courses. The data is summarized by the program coordinator and reflected in the annual assessment report.
- **Portfolios—these are our TAC/ABET course notebooks.** These are prepared annually for selected courses for program assessment and teaching assessment.
- **Senior Design Judge’s Evaluation Form** is used annually during ENT 498. Judges represent a wide range of constituents.
- **SEAS Student Evaluation form** administered in nearly every course.

### **EMET Outcomes Corresponding to TAC/ABET Criteria**

In order to meet the EMET objectives, each EMET graduate will demonstrate the following attributes before graduation.

- A. Theoretical knowledge of fluid and dynamic processes essential to the design of instrumentation and control systems using modern technology. (TAC ABET Outcomes a). Assessed in ENT 301,310,401
- B. The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC ABET outcome f). Assessed in ENT 401,407,418,497/498.
- C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome b). Assessed in ENT 311,401
- D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome c). Assessed in ENT 310, 311, 401
- E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome d). Assessed in ENT 497/498
- F. The ability to work effectively on teams. (TAC/ABET Outcome e) Assessed in ENT 497/498.
- G. The ability to communicate effectively through writing. (TAC/ABET Outcome g) Assessed in ENT 497/498.
- H. The ability to communicate effectively through speech. (TAC/ABET Outcome g) Assessed in ENT 497/498.

- I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome c and k) Assessed in ENT 497/498.
- J. The ability to pursue lifelong learning. (TAC/ABET Outcome h) Assessed in ENT 497/498.
- K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j) Assessed in ENT 497/498.
- L. Deal effectively with diverse cultures. (TAC/ABET Outcome j) Assessed in ENT 497/498

### Matching Outcomes to Meet EMET B.S. Objectives:

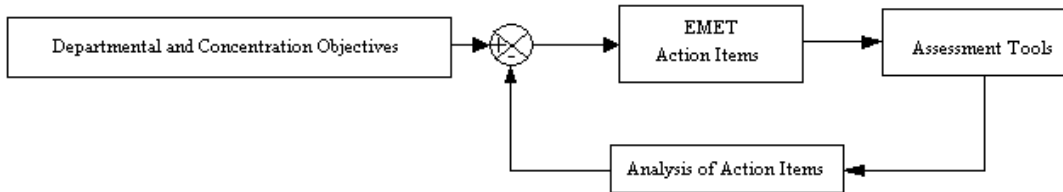
Departmental Objectives	Supporting EMET Outcomes
Apply math and physics principles to the solution of engineering technical problems.	C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome B). Assessed in ENT 311,401.
Use applied skills to identify, evaluate, and solve complex technical problems.	E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome D). Assessed in ENT 497/498 I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome c and k) Assessed in ENT 497/498.
Use engineering computer software to facilitate engineering problem solving.	D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome C). Assessed in ENT 311, 310, 401 E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome D). Assessed in ENT 497/498
Function effectively in team-oriented activities.	F. The ability to work effectively on teams. (TAC/ABET Outcome e) Assessed in ENT 497/498.
Demonstrate the knowledge of expected standards of ethical and professional conduct.	K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j) Assessed in ENT 497/498. L. Deal effectively with diverse cultures. (TAC/ABET Outcome j) Assessed in ENT 497/498.
Verbally communicate ideas.	H. The ability to communicate effectively through speech. (TAC/ABET Outcome g) Assessed in ENT 497/498.
Prepare well-written technical reports.	G. The ability to communicate effectively through writing. (TAC/ABET Outcome g) Assessed in ENT 497/498.
Graduates will have the necessary fundamentals to pursue life-long learning.	J. The ability to pursue lifelong learning. (TAC/ABET Outcome h) Assessed in ENT 497/498.
EMET—Program-specific Objectives	Supporting EMET Outcomes
Possess the ability to apply theoretical knowledge to solve engineering technology problems associated with instrumentation and control systems.	A. Theoretical knowledge of fluid and dynamic processes essential to the design of instrumentation and control systems using modern technology. (TAC ABET Outcomes A). Assessed in ENT 301,310,401 B. The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC ABET outcome F). Assessed in ENT 401,407,418,497/498. C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome B). Assessed in ENT 311,401
Are knowledgeable of modern applications in process control systems.	D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome C). Assessed in ENT 311, 310, 401 E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome D). Assessed in ENT 497/498

TAC/ABET Criteria	EMET Outcomes and Courses
a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines,	A. Theoretical knowledge of fluid and dynamic processes essential to the design of instrumentation and control systems using modern technology. (TAC ABET Outcomes A). Assessed in ENT 301,310,401  C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome B). Assessed in ENT 311,401
b. an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology,	C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome B). Assessed in ENT 311,401.
c. an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes,	I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome c and k) Assessed in ENT 497/498. D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome C). Assessed in ENT 311, 310, 401
d. an ability to apply creativity in the design of systems, components or processes appropriate to program objectives,	E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome D). Assessed in ENT 497/498
e. an ability to function effectively on teams,	F. The ability to work effectively on teams. (TAC/ABET Outcome e) Assessed in ENT 497/498.
f. an ability to identify, analyze and solve technical problems,	B. The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC ABET outcome F). Assessed in ENT 401,407,418,497/498.
g. an ability to communicate effectively,	H. The ability to communicate effectively through speech. (TAC/ABET Outcome g) Assessed in ENT 497/498. G. The ability to communicate effectively through writing. (TAC/ABET Outcome g) Assessed in ENT 497/498.
h. a recognition of the need for, and an ability to engage in lifelong learning,	J. The ability to pursue lifelong learning. (TAC/ABET Outcome h) Assessed in ENT 497/498.
i. an ability to understand professional, ethical and social responsibilities,	K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j) Assessed in ENT 497/498.
j. a respect for diversity and a knowledge of contemporary professional, societal and global issues, and	K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j) Assessed in ENT 497/498. L. Deal effectively with diverse cultures. (TAC/ABET Outcome j) Assessed in ENT 497/498
k. a commitment to quality, timeliness, and continuous improvement	I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome k) Assessed in ENT 497/498.

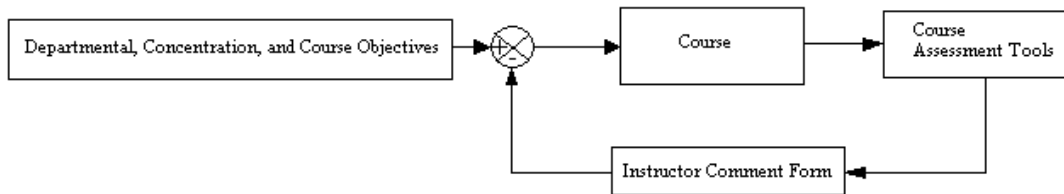
<b>EMET Courses Mapped to Outcomes. Courses marked with an 'X' shows where these subjects are introduced, reinforced, or mastered. The ENT courses are where assessment is focused,</b>	<b>ENT 301</b>	<b>ENT 310</b>	<b>ENT 311</b>	<b>ENT 401</b>	<b>ENT 407</b>	<b>ENT 418</b>	<b>ENT 497-498</b>	<b>MPF Courses</b>
A. Theoretical knowledge of fluid and dynamic processes essential to the design of instrumentation and control systems using modern technology. (TAC ABET Outcomes a). Assessed in ENT 301,310,401	<b>X</b>	<b>X</b>		<b>X</b>				
B. The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC ABET outcome f). Assessed in ENT 401,412,418,497/498.				<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome b). Assessed in ENT 311,412			<b>X</b>	<b>X</b>				
D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome c). Assessed in ENT 311, 401		<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>	
E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome d). Assessed in ENT 497/498							<b>X</b>	<b>X</b>
F. The ability to work effectively on teams. (TAC/ABET Outcome e) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
G. The ability to communicate effectively through writing. (TAC/ABET Outcome g) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
H. The ability to communicate effectively through speech. (TAC/ABET Outcome g) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome c and k) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
J. The ability to pursue lifelong learning. (TAC/ABET Outcome h) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j) Assessed in ENT 497/498.							<b>X</b>	<b>X</b>
L. Deal effectively with diverse cultures. (TAC/ABET Outcome j) Assessed in ENT 497/498							<b>X</b>	<b>X</b>

A graph of the program and course assessment process is shown below:

EMET Concentration Continuous Improvement Chart



Course Assessment Continuous Improvement Chart



### EMET Continuous Improvement Plan

The data gathered by the assessment tools is summarized annually by the program coordinator for review by the EMET faculty. The EMET coordinator is responsible for updating, recording, monitoring, and reporting on the action items. Action items are tabulated each year by the coordinator and shared with the chair and other faculty in the EMET program. A report is generated by the coordinator each spring/summer describing the progress of the action items. Action items are continually monitored from year to year until an acceptable result is achieved.

### Developing EMET Action Items for Continuous Improvement

Action items are determined by the program coordinator, with input from all assessment tools including surveys and faculty feedback. Action items are included in the Fall Program Coordinator report. Also included in this report are results from action items of the previous year. The program coordinator is responsible for creating and monitoring the action items.

**Summary of EMET Assessment:**

What is being assessed?	Who is Responsible?	Frequency	Assessment Tools typically utilized
Program Educational Objectives	Department Chair collects data. Program coordinator evaluates.	Annually for base line.	C, D, F
Program Educational Objectives	Department Chair collects data and prepares summary. Program coordinators evaluate	Selected graduates annually then all graduates every five years	C,D,F
Program Educational Outcomes	Program coordinators and faculty	Data collected every semester. Analysis done annually.	A, B, C, D, E, F, G, H
Senior Design Outcomes	Faculty	Annually	A, B, E,, G, H
Process Characteristics: Teaching and Learning effectiveness	Faculty	Every semester/course	A, B, E
SEAS Characteristics of a Quality Graduate	Chair/Dean's Office	Three times a year.	D

EMET Rubrics

**Electromechanical Engineering Technology Program Rubrics for Outcomes A-E.**

Revised 9/25/2007

**Course Measured**

**Outcome**

**A. Theoretical knowledge of fluid and dynamic processes essential to the design of instrumentation and control systems using modern technology. (TAC ABET Outcomes A)**

	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 310	Has a solid understanding of the application of fluid statics to the analysis and solution of simple fluid mechanics problems.	Has a good understanding of the application of fluid statics to the analysis and solution of simple fluid mechanics problems.	Has little understanding of the application of fluid statics to the analysis and solution of simple fluid mechanics problems.
ENT 310	Has a solid understanding of the nature of energy and the conservation of mass, energy and momentum equation to the solution of simple fluid mechanics problems.	Has a good understanding of the nature of energy and the conservation of mass, energy and momentum equation to the solution of simple fluid mechanics problems.	Has a poor understanding of the nature of energy and the conservation of mass, energy and momentum equation to the solution of simple fluid mechanics problems.
ENT 301	Has a solid understanding of problems involving particles and rigid bodies.	Has a good understanding of problems involving particles and rigid bodies.	Can not solve problems involving particles and rigid bodies.
ENT 301	Demonstrates a clear understanding of the mechanics of accelerating bodies .	Demonstrates a satisfactory understanding of the mechanics of accelerating bodies .	Does not have an understanding of the mechanics of accelerating bodies .
ENT 401	Has a strong knowledge of Fourier Series and Fourier Transforms applied to waveform analysis.	Has a good understanding of Fourier Series and Fourier Transforms applied to waveform analysis.	Has a poor understanding of Fourier Series and Fourier Transforms applied to waveform analysis.

**B. The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC ABET outcome F).**

	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 418	Can solve second order homogeneous and non-homogeneous differential equations using Laplace Transforms and the general and particular solution.	Can solve some second order homogeneous and non-homogeneous differential equations using Laplace Transforms and the general and particular solution.	Cannot solve differential equations.
ENT 418	Can determine transfer functions for most mechanical and electrical systems	Can determine transfer functions for many mechanical and electrical systems	Has no understanding of transfer functions

ENT 418	Can determine the natural frequency and damping response of a servo system.	Can determine the natural frequency but not the damping response of a servo system.	Has no understanding of natural frequency and damping response.
ENT 418	Can draw and read Bode plots for gain and phase response	Can draw and read Bode plots for gain or phase response	Has no knowledge of Bode plots
ENT 407/497/498	Can program PLCs using ladder logic, HMI Programming, Boolean logic and register mapping.	Can program PLCs using ladder logic, and either Boolean logic or register mapping.	Cannot program PLCs
ENT 401/497/498	Has a strong knowledge of the characteristics and interfacing of transducers and measurement devices.	Has a good understanding of the characteristics and interfacing of transducers and measurement devices.	Has a poor knowledge of the characteristics and interfacing of transducers and measurement devices.

**C. The ability to apply concepts of mathematics, physics, and electricity/electronics to measurement and control systems. (TAC ABET outcome B)**

	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 401	Has a strong knowledge of analog and digital filtering.	Has a good knowledge of analog or digital filtering.	Has no knowledge of analog and digital filtering.
ENT 401	Has as strong knowledge of statistics applied to electromechanical systems.	Has a good knowledge of statistics applied to electromechanical systems.	Has no knowledge of statistics applied to electromechanical systems.
ENT 311/401	Has a strong knowledge of basic circuitry, signal conditioning, and electronics applied to instrumentation systems.	Has a good understanding of basic circuitry, signal conditioning, and electronics applied to instrumentation systems.	Has a weak knowledge of basic circuitry, signal conditioning, and electronics applied to instrumentation systems.

**D. The ability to assemble, interpret, and analyze laboratory experiments. (TAC ABET Outcome C)**

	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 310/311/401	Can verify equations using data collected in the lab. Can account for errors encountered in the lab.	Can somewhat verify equations using data collected in the lab, but cannot account for all errors.	Has difficulty collecting data in the lab. Does not verify equations.

**E. The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC ABET Outcome d)**

	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
<b>ENT 497/498</b>	Can effectively apply knowledge gained at Miami to innovative approaches in designing and building electromechanical systems without help.	Can apply some knowledge gained at Miami to innovative approaches in designing and building electromechanical systems without help.	Cannot apply knowledge gained at Miami to innovative approaches in designing and building electromechanical systems even with help.
<b>F. The ability to work effectively on teams. (TAC/ABET Outcome e)</b>			
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
<b>ENT 497/498</b>	Demonstrates understanding of team dynamics flourishes and takes leadership in a team project.	Demonstrates understanding of team dynamics and works well in a team setting	Does not function well in team setting.
<b>G. The ability to communicate effectively through writing. (TAC/ABET Outcome g)</b>			
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
<b>ENT 497/498</b>	Demonstrates excellent and creative writing capability.	Demonstrates solid understanding of good writing principles.	Writing is not effective.
<b>H. The ability to communicate effectively through speech. (TAC/ABET Outcome g)</b>			
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
<b>ENT 497/498</b>	Demonstrates excellent and creative oral communication skills	Demonstrates solid understanding of good oral communication principles.	Ineffective oral communication.
<b>I. The ability to demonstrate continuous improvement. (TAC/ABET Outcome c and k)</b>			
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
<b>ENT 497/498</b>	Demonstrates understanding of and commitment to continuous improvement.	Demonstrates understanding of and need for continuous improvement.	Does not recognize continuous Improvement principles.

	<b>J. The ability to pursue lifelong learning. (TAC/ABET Outcome h)</b>		
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 497	Demonstrates understanding of and commitment to lifelong learning	Demonstrates understanding of and need for lifelong learning	Does not recognize importance of lifelong learning
	<b>K. Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes i, j)</b>		
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 497/498	Demonstrates understanding of and commitment to these principles in project management	Demonstrates understanding of and need for these principles.	Does not recognize importance of these principles.
	<b>L. Deal effectively with diverse cultures. (TAC/ABET Outcome j)</b>		
	<b>Accomplished (5)</b>	<b>Developing (3)</b>	<b>Beginning (1)</b>
ENT 497	Demonstrates effective interaction with, and recognizes the value of, working with diverse cultures.	Interacts well with diverse cultures.	Does not interact well with diverse cultures.