

Assessment & Continuous Improvement Plan

for the

Construction Engineering Technology
(CET)

Program

at

The University of Toledo
Toledo, Ohio



THE UNIVERSITY OF
TOLEDO
1872

Revised November, 2019

Introduction

The following plan outlines the process of assessment and continuous improvement required for accreditation of the program by the ETAC of ABET. Furthermore, the process is also fittingly able to act as an assessment plan for any other program justification study at the local or national level.

The Construction Engineering Technology (CET) program maintains and follows a mission statement that is supported by Program Education Objectives (PEO's) as well as Student Learning Outcomes (SLO's) and specific Program Criteria. Specifically, PEO's are objectives that exhibit the graduates' have been prepared well enough to succeed in industry careers during the first 5 years after graduation. SLO's are specific outcomes related to student achievement upon obtaining a degree for the program. SLO's are ABET driven and mirror the specific requirements of the accrediting organization. Program Criteria are those requirements that are specific to a program in Construction Engineering Technology and are what identify the program as dealing with the construction field of study. The CET Mission Statement along with the associated PEO's, SLO's and Program Criteria are shown below.

Construction Engineering Technology Program Mission Statement

(May 2019)

MISSION STATEMENT

It is the mission of the Construction Engineering Technology (CET) program to prepare students to obtain career positions as professionals in the construction and building industries where they will ensure quality in all phases of construction projects including:

- The coordination of and participation in the design process.
- The monitoring of the quality control of materials and workmanship.
- The management of costs and progression of construction.

PROGRAM EDUCATIONAL OBJECTIVES

In order to achieve this mission, the educational objectives of the program are as follows:

- Graduates will participate effectively in projects as innovative solution providers through appropriate planning, monitoring and managing of all phases of construction in their chosen sector of the industry.
- Graduates will successfully perform in their careers due to their educational background in:
 - fundamental construction and engineering skills which provide the ability to pursue professional registration and industry certifications,
 - teamwork and communications skills,
 - and with a propensity to engage in life-long learning and the continual improvement of their skills and knowledge.
- Graduates will progress successfully in their chosen sector of the construction industry by gaining additional responsibilities and entering leadership roles with their employers.

STUDENT LEARNING OUTCOMES

In support of the program educational objectives, each student successfully completing the requirements for a Degree in the Construction Engineering Technology program is expected to have:

- (1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- (2) an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- (3) an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- (4) an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- (5) an ability to function effectively as a member as well as a leader on technical teams.

PROGRAM CRITERIA

In order to prepare each student in the specific requirements for a Degree in Construction Engineering Technology, the program provides instruction in the following curricular areas:

- a) the utilization of techniques that are appropriate to administer and evaluate construction contracts, documents, and codes;
- b) the estimation of costs, estimation of quantities, and evaluation of materials for construction projects;
- c) the utilization of measuring methods, hardware, and software that are appropriate for field, laboratory, and office processes related to construction;
- d) the application of fundamental computational methods and elementary analytical techniques in sub-disciplines related to construction engineering;
- e) the production and utilization of documents related to design, construction, and operations;
- f) the performance of economic analyses and cost estimates related to design, construction, and maintenance of systems associated with construction engineering;
- g) the selection of appropriate construction materials and practices;
- h) the application of appropriate principles of construction management, law, and ethics; and
- i) the performance of standard analysis and design in at least one sub-discipline related to construction engineering.

Interrelationship of Mission Statement Components

In part, the PEO's are supported by the SLO's. This relationship is shown below in Table A.

Table A: Mapping of CET Student Outcomes to Program Educational Objectives

	UT CET Program Educational Objectives			
		1	2	3
UT CET Student Outcomes	1	X	X	X
	2	X	X	-
	3	X	X	X
	4	X	X	-
	5	X	X	X

The CET program SLO's corresponds directly to the ABET SLO's on a one to one basis and require no such mapping as it would be superfluous.

Maintenance and Revision of the Mission Statement

The Mission Statement (inclusive of the PEO's, SLO's and Program Criteria) are maintained by receiving input on a regular basis from program constituencies. Constituents of the program include:

1. Current students in the program
2. CET program Industrial Advisory Board (IAB)
3. Co-operative education program employers
4. Employers of program graduates
5. Alumni of the program
6. Graduate school programs

Graduating students' input is obtained from EBI exit surveys prior to graduation. During this survey, general information is collected about department and program strengths and weaknesses. Graduate/alumni input along with that of the corresponding employee's supervisor(s) is obtained via the CET Graduate and Employer Survey Initiative (GESI) on a one, three and six-year basis from the point of graduation.

Co-op students and employers are required to complete quality surveys after each co-op assignment. The CET IAB represents the views of co-op employers, employers of program graduates, and to some degree alumni of the program. The IAB is composed of representatives from consulting companies, government, and construction firms. The IAB meets with the entire CET faculty on an annual basis to discuss various issues related to the undergraduate program and options for our graduates. Reviews of the program educational objectives are always a topic of discussion and the IAB has the ability to directly propose changes and additions to the list.

At any point when it is found that the Mission Statement is in need of revision due to a significant amount of suggestions by constituencies and/or through the analysis of collected data, the process to modify the Mission Statement is initiated by the CET program director who acts as its curator. The director coordinates the formulation of the proposed changes from any of the sources of input previously mentioned. The proposal is first passed through the CET faculty for review and approval. The final version is then given to the IAB for review and approval.

The Assessment Process

The assessment and evaluation process takes a dual approach to verification of the achievement of the Student Learning Outcomes:

1. Direct evidence from course assessment measures.
2. Indirect evidence from:
 - a. The Graduate & Employer Survey Initiative (GESI)
 - b. College Co-op Student & Employer Surveys
 - c. Senior EBI Exit Surveys

The assessment process is intended to be a continuous process that yields data on an annual basis and allows for continuous improvements to the curriculum where they are found to be warranted. The process has evolved into its current state over a period of 15 years as an understanding of the ABET outcomes assessment process has become more clear, additional types of data become available and more efficient means of assessment become apparent.

The process is always evolving and improving. The process follows the current procedures listed as follows:

Key Measures Collection

Responsible Parties: Program Faculty (Collection), Program Director (Compilation)

Frequency: Every semester

Each faculty member is required to provide an analysis of a key measure should it be indicated as such on the Outcomes to Assessment Instrument Linkage document (found in the Appendix of this plan). The linkage document summarizes the course assessment measurements to be used and how each SLO, program criteria and discipline specific content item (DSC) relates to each course. This linkage document provides a framework from which faculty within the program are required to operate in order to assess the outcomes assigned to courses for which they are responsible. It identifies several points within courses (projects, exams, quizzes and other assignments) which clearly relate to the program SLO's and criteria and should be analyzed as the assignments are collected and graded throughout each semester during which the course is offered.

Course key measures correspond to CET SLO's, Program Criteria and Discipline Specific Content as determined by the CET faculty. This relationship is shown below in Table B. A standard threshold graded level for student assignments was set at an 80% score which represents the lower end of a B grade in the standard grading scale. A threshold percentage of students achieving the 80% grade is then used for determining successful achievement of the measure in any course.

Table B: Mapping of CET Courses to CET Student Outcomes & Program Criteria

		University of Toledo																								
		Construction Engineering Technology Program																								
		Student Outcomes & Program Criteria vs. Course Matrix																								
		CET-1010	CET-1100	CET-1150	CET-1200	CET-1210	CET-1250	CET-2010	CET-2030	CET-2060	CET-2110	CET-2220	CET-2250	CET-3010	CET-3020	CET-3120	CET-3160	CET-3210	CET-3220	CET-4250	CET-4350	CET-4460	ENGT-2000	ENGT-3600	ENGT-4050	
Student Outcomes																										
1) Ability to apply knowledge, techniques, skills & tools of mathematics, science, engineering, & technology to solve engineering problems appropriate to the discipline		I	I	I	A	I	A		I	A	A	A	A	A	A	A		A	A	P	P	P		A	P	
2) Ability to design systems, components, or processes meeting specified needs for engineering problems appropriate to the discipline;									A				A		A	A			A	P	P				A	
communication in technical & non-technical environments; & an ability to identify and use appropriate technical literature;		I	I	I		I			A					A			A	A				P	A	A	P	
4) Ability to conduct standard tests, measurements, and experiments and to analyze & interpret the results to improve processes;											A	A														
5) Ability to function effectively as a member as well as a leader on technical teams.		I				I					A	A				A		A	A						A	
Program Criteria																										
a) Techniques appropriate to administer and evaluate construction contracts, documents, & codes;			X	X										X	X		X					X		X		
b) Estimation of cost & quantities, and evaluation of materials for construction projects;				X			X			X	X				X	X							X			
c) Utilization of measuring methods, hardware, and software that are appropriate for field, laboratory, and office processes related to construction;			X			X			X	X	X	X		X				X		X	X	X				
d) Application of fundamental computational methods and elementary analytical techniques in sub-disciplines related to construction engineering;		X			X	X	X		X		X	X	X					X	X	X	X	X		X		
e) Production and utilization of documents related to design, construction, and operations;			X						X	X				X			X						X			
f) Performance of economic analyses & cost estimates related to design, construction, and maintenance of systems associated with construction engineering;										X				X	X							X		X		
g) Selection of appropriate construction materials & practices;				X	X		X			X	X			X	X					X						
h) Application of appropriate principles of construction management, law, and ethics;		X						X									X						X			
i) Performance of standard analysis & design in at least one sub-discipline related to construction engineering.					X					X		X			X			X	X		X					
Discipline Specific Content																										
+ Industry standards & codes			X	X	X		X	X	X		X	X	X	X	X	X	X			X	X					
+ Public safety & health								X				X		X	X	X										
+ Local & global impact of engineering solutions on individuals, organizations and society														X				X							X	
+ Professional responsibilities		X					X		X	X			X			X						X	X			
+ Ethical responsibilities		X												X		X									X	
+ Respect for diversity								X																X		
+ Quality & continuous Improvement			X		X			X		X		X												X		

08/30/19

I= Introduction

A= Applications

P= Proficiency

X= Evidence

To be successfully achieved, a key measure in courses where mostly freshman are enrolled and introductory concepts are taught, 70% of the students should attain an 80% (B) grade on a key measure assignment. In applications-based courses, 80% of the students are expected to attain a B-level success on assignments. In upper-level proficiency-based courses, 90% of the students should perform at the 80% level on key measure assignments. This graduated level of attainment of student outcomes is reflected in each individual course key measure as found in the linkage document. Faculty members should follow the ensuing step by step procedure for collecting data from a course key measure:

1. Assign student work listed as a key measure in the linkage document corresponding to the course being taught.

2. Complete a standard CET course assessment form (shown below)
3. Make a number of copies of the form that corresponds to the total number of SLO's assigned to the key measure. Insert one copy into each corresponding SLO section. One additional copy should be inserted in the Program Criteria/Discipline Specific Content section of the current year assessment binder.
4. Log the summary results in each corresponding summary log on the server drive as directed by the program director. (A sample Log Sheet is shown in Figure 1 below.)

Construction Engineering Technology **Course Outcomes Assessment Form**

Course No:**Semester:****Course Name:****Reviewed by:** (Instructor Name)**Assessment measurement tool:** Descriptive Title (*See Linkage Document*)

Quick explanation of assignment.

Outcomes to be addressed by measurement:ABET SLO: **1, 2, 3, 4, 5** (*Delete those not pertinent, see Linkage Document*)**Expected/desired results:**A desirable result is achieved by **70/80/90%** of the students obtaining an 80% grade or better on the problem. (*See Linkage Document*)**Actual Results:**

of ## students (##%) received an 80% or better on the qualifier.

Comments regarding results:**Trailing 4 results:**

Term	F15	F16	F17	F18
Results	%	%	%	%

Action Taken: *Provide a summary of proposed action if threshold score was not met after consulting the CET Action Decision Rules.***Evidence of Student Work**

Students produced work that can be connected to the following Program Criteria or Discipline Specific Content:

Program Outcomesa – j (*List those pertinent, see Linkage Document*)Discipline Specific Content (*Delete those not pertinent, see Linkage Document*)

Industry standards & codes, Public safety & health, Local & global impact of engineering, Professional responsibilities, Respect for diversity, Quality & continuous Improvement

Faculty members are encouraged to submit additional analyses apart from those required when they find that a course assignment directly corresponds to a particular individual SLO, Program Criteria or DSC. The linkage document is periodically reviewed and updated for conformance to the current subject matter using faculty input.

Figure 1: Typical CET Course Key Measure Log-in Sheet (ABET Outcome 1 shown)

University of Toledo Engineering Technology Department Construction Engineering Technology Program Outcomes Assessment Summary					
Student Outcome: ABET-1) Students will have an ability to apply knowledge, techniques, skills & modern tools of math, science, engineering, & technology to solve broadly-defined engineering problems appropriate to the discipline.					
Assessment Measure/ Course	Semester Reported	Expectation	Results	Accept able	Actions
CET-2030 Site Plan Reading Qualifier	Fall 2019	At least 80% of the students will score an 80% grade or better on the exam.	20 of 24 students (83%) scored an 80% or better on the exam.	Yes	No action required. Improvements in additional plan reading have help improve this measure.

Graduate and Employer Survey Initiative (GESI)

Responsible Parties: Program Director

Frequency: Every Year (Collection), Annually (Summary)

The program director is responsible for the GESI which provides data from the graduates and their employers. Responses are annually solicited from graduates who have been out of school for 1, 3 and 6 years. The director maintains the graduate database, transmits the surveys to the corresponding graduates and compiles the results on an annual basis. The resultant report is reviewed by the faculty as well as the IAB with action items formulated as the need is found.

Results which can be directly attributed to an individual outcome are entered into the annual assessment recap matrix and are used as a data point in the final decision of an outcome achievement. The threshold for discerning whether the corresponding outcome has been successfully achieved is a -0.5 difference. This considers that on the average, graduates normally feel a bit under prepared and could always have learned more.

Educational Benchmarking, Inc. (EBI) Surveys

Responsible Parties: Senior Capstone Instructor (Distribution via web link),
Associate Dean for Undergraduate Studies (Collection),
Program Director (Summary)

Frequency: Every semester (Collection), Annually (Summary)

Initial administration of the senior exit surveys is performed through a web link emailed to each student as a part of the ENGT-4050 Senior Technology Capstone course each semester. EBI, Inc. compiles and analyzes the data from the standard question forms. The program director is responsible for mining the data from the EBI report on an annual basis and producing a summary report regarding the results. Again, results which can be directly attributed to an individual student outcome are entered into their corresponding sections in the annual assessment recap matrix as previously mentioned. For threshold scores when using EBI results to ascertain the achievement of student outcomes, it is deemed that both the current and 5-year trailing averages of the annual EBI ratings for a category will not significantly trail the peer institutions provided for comparison.

Co-op Student & Employer Survey Data

Responsible Parties: Career Office (Collection), Program Director (Summary)

Frequency: Every semester (Collection), Annually (Summary)

The College of Engineering Career Development Center (ECDC) requires that co-op students and their employers complete a multi-question survey after the student has completed each co-op assignment. Raw data from these surveys are combined into a spreadsheet for departmental review upon request. The program director is responsible for sorting and reducing the data into a useful format and summarizing the results with a report. Again, results that can be directly correlated to student outcomes are added to the annual assessment recap matrix. For threshold scores when using Co-op Survey results to ascertain the achievement of student outcomes, it is deemed that success is achieved when over 70% of the responses are affirmative in nature.

Student Outcomes & Program Criteria Evaluation Recap

Responsible Parties: Program Faculty & Director

Frequency: Annually

After the spring semester (most normally the following fall term when all data has been made available and compiled), the CET program faculty meet to review the contents of the student outcomes and criteria binder. Log sheets are tabulated and an accounting is made on the success of the achievement of each student outcome, dependent upon the number of successful versus unsuccessful measures. Outcomes that are not successfully achieved are reviewed and strategies for improvement are formulated dependent upon the Action Decision Rules. Additionally, a summary of the course coverage of program criteria and discipline specific content is also compiled in the report.

Each outcome's achievement success is documented on a standard form that lists the results and action items for the future. (A sample summary sheet is shown in Figure 2 below.) A summary of the assessment of all student outcomes is then compiled in a summary matrix for ease of presentation. Table C. below shows a sample summary matrix for Student Learning Outcomes as required by ABET.

Figure 2: Typical CET Outcome Summary Form (Student Outcome 1 shown)

**Construction Engineering Technology
Outcome Summary Form**

Outcome: (1) an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline;

Date of Review: →

Reviewed by: → **CET Faculty:** Kissoff, Beall, Mata, Daugherty

Results of Measurements:

Number of Assessment Measures Performed	Outcome/Criteria Achieved by Measurement	Outcome/Criteria Not Achieved by Measurement
50	32	18

Outcome/Criteria Achieved?: Yes

Comments regarding results: 1.8 to 1 Achievement level. Trending upwards.

Achievement History:

	17-18	16-17	15-16	14-15
# of Measures	50	53	56	59
# Achieved	32	32	39	46
# Not Achieved	18	21	17	13
#:1 Ratio	1.8	1.5	2.3	3.5
Trend Level	□	4	□	□

ADR Enacted?: No. All ADR's cleared.

Action Taken: None required.

Table C: Typical CET Program Student Learning Outcomes Assessment Summary

	10/18/19	# of Measures	# Achieved	# Not Achieved	GESI Grads (1-Year)	GESI Employers (1-Year)	GESI Grads (3-Year)	GESI Employers (3-Year)	GESI Grads (6-Year)	GESI Employers (6-Year)	Co-op Employers	EBI Surveys	Criteria/Outcome Achieved	Comments & Action Items
Student Outcomes														
1) Ability to apply knowledge, techniques, skills & tools of mathematics, science, engineering, & technology to solve engineering problems appropriate to the discipline		32	22	10	OK	OK					Excel	Compares	YES	
2) Ability to design systems, components, or processes meeting specified needs for engineering problems appropriate to the discipline;		27	20	7	OK	OK	Good	Good	Excel	OK	Excel	Exceeds	YES	
3) Ability to apply written, oral & graphical communication in technical & non-technical environments; & an ability to identify and use appropriate technical literature;		21	11	10	Marg	Good	OK	Poor	Excel	Good	Good	Compares	YES	A look at communications practices is in order due to low results
4) Ability to conduct standard tests, measurements, and experiments and to analyze & interpret the results to improve processes;		8	6	2	OK	OK					Excel	Compares	YES	
5) Ability to function effectively as a member as well as a leader on technical teams.		11	8	3	Good	OK	Good	Good	OK	Good	Excel	Exceeds	YES	
<u>GESI = Graduate & Employer Survey Initiative</u>		<u>GESI = Graduate & Employer Survey Initiative</u>			<u>Co-op Survey</u>			<u>EBI Survey</u>						
Most recent year results used		(3 and 6 Year Grads)			Excellent = Response > 90%			Exceeds = CET Rating Exceeds others						
Poor = Diff. Much Greater than -0.5		Exc = Excellent, 4.1 < 5.0			Good = Response > 70%			Compares = CET Rating Compares to others						
Marg= Marginal (Diff. Close to -0.5)		Good = 3.1 < 4.0			OK = Response > 50%			DNTS = CET Rating Does Not Trail significantly						
OK = Diff. about -0.5 to 0 or better		OK = 2.1 < 3.0			Poor Response < 50%			Trails = CET Rating trails all others						

Program Educational Objective Evaluation Recap

Responsible Parties: Program Faculty, Program Director,
IAB Frequency: Annually

While ETAC-ABET no longer requires Engineering Technology programs to verify achievement of its PEO's, the CET program still evaluates its PEO's as a valuable process in determining the success of the program's mission. The assessment of the PEO's provides valuable assistance to the program's faculty and IAB with regard to the process of maintaining overall program quality and direction.

As previously detailed, a portion of the achievement of the PEO's is supported by the success of the SLO's as shown in Table A. Additional outcome achievement is also supported through data obtained through the GESI responses and the Co-op survey responses. These results are reviewed on an annual basis, most normally in the following fall term and are again reviewed at the next year's IAB meeting. Due to the multiple assessment points that are obtained, a summary of these points is compiled in a matrix to allow for ease of presentation. In conjunction with the results of outcomes achievement, a conclusion of the achievement of the PEO's is then determined from the summary of the results. A sample of a summary of the PEO's achievement is found in Table D shown below.

Table D: Typical Summary of Achievement of Program Educational Objectives

Assessment Measure	PEO 1. Grads will participate effectively in projects...	PEO 2. Grads will successfully perform in their careers..	PEO 3. Grads will progress successfully in their chosen sector...	Comments
ACH= Achieved, NA=Not Achieved				
Student Outcomes Overall Results	ACH	ACH	ACH	See PEO to Student Outcome Mapping
Co-op Survey Student Resp: The work was related to my academic career	ACH	---	---	93% Agree or Strongly Agree
Co-op Survey Student Resp: I was academically prepared for the co-op	ACH	ACH	---	93% Agree or Strongly Agree
Co-op Survey Student Resp: I was challenged by the work	ACH	---	---	88% Agree or Strongly Agree
Co-op Survey Student Resp: I found the work overwhelming	NA	---	---	60% Disagree or Strongly Disagree
Co-op Employer Resp: Overall Evaluation of the student work	ACH	---	---	0 negative responses out of 24 total.
Co-op Employer Resp: Was the student academically prepared for the co-op?	ACH	---	---	83% agree.
Senior Exit Interview: Overall Opinion of Program	#	---	---	Interview Sheets not collected this AY
Senior Exit Interview: Rating of the overall performance of Dept.	---	#	---	Interview Sheets not collected this AY
GESI Grad Response: Employed in industry?	ACH	---	---	All respondents are employed in industry
GESI Grad Response: Commensurate job titles?	ACH	---	---	All have job titles commensurate with CET
GESI Grad Response: Professional/Industry Certifications	ACH	ACH	---	7/7 Passes on FE. Plus LEED, PMP, ACL, ODOT & CAPM
GESI Grad Response: Salary Progresssion	---	ACH	ACH	3 & 6 yr grads progress steadily each interval
GESI Grad Response: Relevance of CET education prep to work?	ACH	ACH	---	94% rated good or excellent.
GESI Grad Response: Rating of skills based on CET Program preparation.	ACH	ACH	---	All skills rated 3.7 avg. or greater out of 5
GESI Grad Response: Progressed in position & taken leadership role?	---	ACH	ACH	97% affirmative response
GESI Grad Resp: Have you continued your education?	---	ACH	ACH	83%+ have performed some manner of CE
GESI Employer Response: Would you hire UT CET again?	ACH	ACH	---	1,3, & 6 yr employers unanimously affirmative
GESI Employer Response: Rank of the Grad's preparedness.	ACH	ACH	---	Average 4.00 out of 5 rating for 1 yr. grads
GESI Employer Response: Rating of the Grad's Career Skills	ACH	ACH	---	All skills rated 3.92+ out of 5, Avg. = 4.31
GESI Employer Response: Grad progressed in position?	---	ACH	ACH	Unanimously affirmative
GESI Employer Response: Grad gained responsibility?	---	ACH	ACH	Unanimously affirmative
GESI Employer Response: Grad taken a leadership role?	---	ACH	ACH	Nearly Unanimously affirmative
GESI Employer Response: Grad shown innovation?	ACH	---	---	Unanimously affirmative
GESI Employer Response: Grad shown evidence of being a problem solver?	ACH	---	---	Unanimously affirmative

Continuous Improvement

Responsible Parties: Program Faculty, Director

Frequency: Annually with measures, continuously as need arises

The process previously above shall continue on an annual basis with special attention being directed at deficient areas that require action to correct. While improvements are always welcome to any course, action for improvement due to a single unmet achievement should not always require a major overhaul of the course or assessment measure. However, to ensure adequate action is taken within a course to improve achievement of assigned outcomes, the following Action Decision Rules (ADR's) loosely based on the Westgard Rules for QC(1), shall be used to determine if action for improvement in a course is warranted due to deficient achievement.

Table E: Action Decision Rule (ADR) Matrix for Unmet Course Key Measures

Number of Consecutive Occurrences	Missing Desired Student Achievement Threshold by:	Examples for % of Students Scoring 80% on Measure
Two (2)	-50% or more	Need 90% but obtain 35% (-55%)
Three (3)	-25% or more	Need 70% but obtain 40% (-30%)
Four (4)	-10 % or more	Need 90% but obtain 77% (-13%)
Five (5)	-1% or more	Need 70% but obtain 68% (-2%)

Waiver of the ADR's on a case by case basis can be made in consultation with the CET program director, or in case of courses taught by the director a consultation shall be made with another CET faculty member. Waivers can be granted to suspend ADR mandated improvement action in special cases where outside or extenuating circumstances affected the results of the course key assessment measure. Such circumstances could include power or network outages, school day cancelations, multiple exams in a single day for the majority of students, a new instructor teaching the course and so on.

Improvements on a wider program-level shall also be warranted should the overall total number of successful achievement measures be deemed to be unsatisfactory. To ensure adequate action is taken within the program to improve achievement of an unmet outcome, the following three step process should be followed:

Step 1: The following ADR's (shown in Table F below) shall be used to determine whether further investigation or possible action for improvement at the program-level is warranted due to the aggregate make-up of the direct course measures attributable to a specific outcome. If one of the ADR thresholds is not met for the overall achievement of an outcome via key course measure totals, the process proceeds to Step 2.

**Table F: Action Decision Rule (ADR) Matrix of Outcomes & Criteria
For Annual Course Measure Totals**

Number of Consecutive Years of Occurrence:	Ratio of total Successful (Yes) vs. Unsuccessful (No) Key Course Measures for Outcome Achievement:	Example Annual Score Totals Requiring Action
Two (2)	Less than 1 to 1 or worse	12 Yes & 14 No
Three (3)	At or just exceeding 1 to 1 or worse	14 Yes & 12 No
Four (4)	3 to 2 or worse	12 Yes & 8 No

Step 2: After determination that an ADR for an annual outcome total has been surpassed, a review of the associated indirect evidence shall be made. A review of the annual evidence summary of Co-op, EBI or GESI surveys should be used to determine the overall severity of the missed achievement level for the outcome in question. In any event, the process proceeds to Step 3.

Step 3: Upon reaching Step 3, the first course of action is to determine if there is an extenuating set of circumstances creating deficiencies in the achievement of a student outcome or program criteria. Such circumstances could include the sudden loss of program faculty requiring multiple part-time instructor use, a change to the structure of the university calendar or a major shift in program student demographics. Adequate evidence should be provided within the annual assessment report to document the anomalous situation causing the non-achievement.

- Should circumstances beyond the control of the program be identified as causes of the non-achievement, the process ends in no action.
- Should it be determined that improvements can be made either through multiple course actions or an overall programmatic change (such as admissions requirement alterations, prerequisite modifications, changes to multiple courses and so on), the proposed action will be followed through and the success of the changes documented in successive years.

Step 4: Loop Closure Documentation: Use the CET Loop Closure Form (shown below) to provide documentation of the improvement to the program or course and the results that occurred after the improvement was enacted. Completed Loop Closure forms should be filed in the Loop Closure Binder by year.

Figure 3: Typical CET Loop Closure Form

Construction Engineering Technology
Loop Closure Assessment Form

Outcome/Criteria being Assessed:

Course No:

Semester:

Or Non-course measurement: Grad Survey EBI Survey Other

Description of Assessment Instrument:

Prior Results:

Semester:

Year:

Action Taken from Prior Results:

Current Results:

New Results Satisfactory?? Yes _____

No _____

Further Action Recommended?:

Closure reviewed by:

Date of Report:

Documentation

Documentation of the annual assessment review and continuous improvement process shall be collected and stored in a binder containing the following items:

- 1) Summary Report
 - a. Narrative of annual assessment results
 - b. Comments on data & results
 - c. Updates on continuous improvement initiatives
 - d. Summary of proposed actions
- 2) Summary Matrix of Assessment results
 - a. Student Outcomes & Program Criteria Summary Matrix
 - b. Program Educational Objectives Summary Matrix
 - c. Matrix of Unmet Course Assessment Measures
- 3) Annual Summary Report of EBI results
- 4) Annual Summary Report of Co-op surveys
- 5) Annual Summary Report of GESI results
- 6) Tabbed sections for outcomes assessment containing:
 - a. Outcomes/Criteria Section Summary Form
 - b. Outcomes/Criteria log sheets in each section
 - c. Course Outcome sheet for each assessment measure listed in linkage
- 7) Loop closure and improvement form along with any supporting documentation regarding the closure

References

1. Westgard Rules & Multi-rules for QC, <https://www.westgard.com/mltirule.htm>

History of Plan Revisions

November 2017	Initial plan formalized and distributed to faculty for comments.
May 2018	Addition of examples to ADR tables. Addition of form for Continuous Improvement Loop Closure.
August 2018	Updated Linkage Document and Outcomes & Criteria Matrix for improved coverage of Outcome d, ENGT-2000 and CET-1150 & 3160.
November 2019	Revise entire plan for new ABET Student Outcomes, Program Criteria and Discipline Specific Content categories and collection methods. Also revised for new CET-2010 course add in Fall 2019.

APPENDIX

Construction Engineering Technology **Program Assessment Outcomes to** **Assessment Instrument Linkage**

This document has been prepared in order to identify, on a class by class basis, the assessment instruments from each class that are used to support the ABET Student Outcomes, Program Criteria and Discipline Specific Content that are required of the Construction Engineering Technology program. This will guide those teaching the classes as to where to look to prepare, collect and evaluate key measures for the assessment and student work as evidence. This document should be used in conjunction with the CET Mission Statement and outcomes matrix which lists the individual outcomes, program criteria and discipline specific content.

Assessment Measures: require an analysis of the grades on the assignments and must be performed every semester.

Student Work Evidence: specific targeted work performed in or out of class by the students every semester that provides proof that Program Criteria or Discipline Specific Content assignments are matched with a topic covered in class. While this student work needs to be performed every time the course is offered, the evidence only needs to be reported that it has been performed each term with copies of evidence supplied ONLY for ABET visits.

CET-1010 Introduction to CET

Assessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 70% of Students

- Teamwork Quiz Problems
ABET/Student Outcomes: 5
- Technical Communications Worksheet
ABET/Student Outcomes: 3
- “Figure It Out” Calculation Assignment
ABET/Student Outcomes: 3
- CETK Double Final Quiz
ABET/Student Outcomes: 1

Student Work Evidence

- Professional Registration Quiz Problems
Discipline Specific Content: Professional Responsibilities

- CETK Double Final Quiz
Program Criteria: d
- Engineering Ethics Quiz Problems & Ethics Case Response
Program Criteria: h
Discipline Specific Content: Ethical Responsibilities

CET-1100 Architectural DraftingAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 70% of Students

- Final Plan Set Drafting Project
ABET/Student Outcomes: 1 & 3

Student Work Evidence

- Final Plan Set Drafting Project
Program Criteria: e
Discipline Specific Content: Industry Standards & Codes, Quality and Continuous Improvement

CET-1150 Construction Materials & CodesAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 70% of Students

- Construction Research Essays
ABET/Student Outcomes: 1 & 3
- Exam Questions on Construction Methods & Design
- Exam Questions on Construction Materials
- Exam Questions on Codes & Specifications
ABET/Student Outcomes: 1

Student Work Evidence

- Construction Research Essays
- Exam Questions on Construction Methods & Design
- Exam Questions on Construction Materials
- Exam Questions on Codes & Specifications
Program Criteria: a, b, & g
Discipline Specific Content: Industry Standards & Codes,

CET-1200 Engineering MechanicsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Statics Exam: Vector Mechanics Problem
 - Shear & Bending Moment Problem
- ABET/Student Outcomes: 1

Student Work Evidence

- Statics Exam: Vector Mechanics Problem
 - Shear & Bending Moment Problem
- Program Criteria: d, g & i
-
- Discipline Specific Content: Industry Standards & Codes, Quality and Continuous Improvement

CET-1210 SurveyingAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 70% of Students

- Survey Field Book Review
- ABET/Student Outcomes: 1,3

- Field Traverse Project
- ABET/Student Outcomes: 1,3 & 5

- Bearing & Azimuth Calculation Problem
- ABET/Student Outcomes: 1

Student Work Evidence

- Survey Field Book Review
 - Bearing & Azimuth Calculation Problem
- Program Criteria: c & d

- Field Traverse Project
- Program Criteria: c

CET-1250 Building SystemsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 70% of Students

- Heat Loss & Gain Calculation Homework
 - Foot-candle Calculation Homework
 - Circuit Breaker Design Homework
- ABET/Student Outcomes: 1

Student Work Evidence

- Heat Loss & Gain Calculation Homework
 - Foot-candle Calculation Homework
 - Circuit Breaker Design Homework
- Program Criteria: b & d
-
- Discipline Specific Content: Industry Standards & Codes

CET-2010 Construction SafetyStudent Work Evidence

- Construction Safety Standards on Final Exam
- Program Criteria: g & h
-
- Discipline Specific Content: Industry Standards & Codes, Public Safety & Health, Professional Responsibilities

CET-2030 Construction GraphicsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Final Site Plan Drafting Project Submittal
- ABET/Student Outcomes: 3

- Drafting Qualifier Assignments (Inroads Surfaces & Roadway Design)
- ABET/Student Outcomes: 1

- Horizontal & Vertical Curve Quiz or Exam Problems
- ABET/Student Outcomes: 1

- Site Layout Assignment
ABET/Student Outcomes: 2 & 3

- Site Plans Reading Qualifier Exam
ABET/Student Outcomes: 1

Student Work Evidence

- Site Layout Checking Quiz/Assignment
Discipline Specific Content: Industry Standards & Codes,
Quality & Continuous Improvement
- Final Site Plan Drafting Project Submittal
Program Criteria: c & e
Discipline Specific Content: Quality & Cont. Improvement
- Site Dimensioning Exam Problem
Program Criteria: e
- Highway Plan Reading Exam Problem
Program Criteria: e
- Site Plans Exam Problem
Program Criteria: e
- Site Plans Reading Qualifier Exam
Program Criteria: e
- Drafting Qualifier Assignments (Inroads Surfaces & Roadway
Design)
Program Criteria: c & e
- Horizontal & Vertical Curve Quiz or Exam Problems
Program Criteria: d
- Site Layout Assignment
Discipline Specific Content: Industry Standards & Codes
- ADA Accessibility Field Assignment
Discipline Specific Content: Respect for Diversity

CET-2060 Construction EstimatingAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Final Cost Estimating Project
ABET/Student Outcomes: 1

Student Work Evidence

- Final Cost Estimating Project
Program Criteria: b, c, e & f,
Discipline Specific Content: Professional Responsibilities

CET-2110 Materials TestingAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Concrete Mixture Proportioning & Compressive Strength Lab Reports
ABET/Student Outcomes: 1, 4 & 5
- ACI Field Testing Technician – Grade 1 Certification
- Final Exam
ABET/Student Outcomes: 1 & 4

Student Work Evidence

- Concrete Mixture Proportioning & Compressive Strength Lab Reports
- ACI Field Testing Technician – Grade 1 Certification
Program Criteria: b, c, d, g & i
Discipline Specific Content: Industry Standards & Codes, Professional Responsibilities, Quality & Continuous Improvement
- Final Exam
ABET/Student Outcomes: a, c & e CET Criteria: 2,4 & 8
Program Criteria: b, c, d, g & i
Discipline Specific Content: Industry Standards & Codes, Professional Responsibilities

CET-2220 Soil MechanicsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Proctor and Soil Compaction Lab Reports
- Unconfined Soils Compression Lab Reports
ABET/Student Outcomes: 1,4 & 5
- Differential Settlement Calculation Problems
ABET/Student Outcomes: 1

Student Work Evidence

- Proctor and Soil Compaction Lab Reports
- Unconfined Soils Compression Lab Reports
Program Criteria: c, d & g
Discipline Specific Content: Industry Standards & Codes, Quality & Continuous Improvement
- Differential Settlement Calculation Problems
Program Criteria: d & g

CET-2250 Structural DesignAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Wood Column, Beam & Truss Exam Problems
- Steel Beam, Bearing Plate and Column Exam Problems
ABET/Student Outcomes: 1 & 2

Student Work Evidence

- Wood Column, Beam & Truss Exam Problems
- Steel Beam, Bearing Plate and Column Exam Problems
Program Criteria: d & i
Discipline Specific Content: Industry Standards & Codes, Public Health & Safety, Quality & Continuous Improvement

CET-3010 Architectural CADDAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Written & Graphical Midterm Exam
 - Written & Graphical Final Exam
 - BIM Case Study
 -
- ABET/Student Outcomes: 1 & 3

Student Work Evidence

- Written & Graphical Midterm Exam
 - Written & Graphical Final Exam
 - BIM Case Study
- Program Criteria: a, c, & e
Discipline Specific Content: Industry Standards & Codes,
Professional Responsibilities

CET-3020 Sustainable Design & ConstructionAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- LEED Project Case Study
 - Design Vignette
- ABET/Student Outcomes: 1 & 2

Student Work Evidence

- LEED Project Case Study
 - Design Vignette
- Program Criteria: a, b, f & g
Discipline Specific Content: Industry Standards & Codes, Public
Health & Safety, Local & Global Impacts, Ethical Responsibilities

CET-3120 Advanced Construction MaterialsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Pavement Design Project
ABET/Student Outcomes: 1,2 & 5

Student Work Evidence

- Pavement Design Project
Program Criteria: b,f,g & i
Discipline Specific Content: Industry Standards & Codes

CET-3160 Contracts & SpecificationsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Midterm or Final Test questions on General Conditions
ABET/Student Outcomes: 3

Student Work Evidence

- Midterm or Final Test questions on General Conditions
Program Criteria: a, e & h
Discipline Specific Content: Industry Standards & Codes, Public Safety & Health, Professional Responsibilities, Ethical Responsibilities

CET-3210 Survey ApplicationsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Final Topography Collection Project
ABET/Student Outcomes: 1,3 & 5
- Survey Field Book Grade
ABET/Student Outcomes: 1 & 3

- Metes & Bounds Interpretation Problem
ABET/Student Outcomes: 1

Student Work Evidence

- Final Topography Collection Project
Program Criteria: c & d
- Survey Field Book Grade
Program Criteria: c
- Metes & Bounds Interpretation Problem
Program Criteria: c & d

CET-3220 Hydrology & Hydraulics

Assessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Bernoulli Application Quiz
ABET/Student Outcomes: 1
- Storm Sewer and Culvert Design Projects
ABET/Student Outcomes: 1,2 & 5

Student Work Evidence

- Bernoulli Application Quiz
Program Criteria: d
- Storm Sewer and Culvert Design Projects
Program Criteria: i
- E&SC Plan Final Exam Problem
Discipline Specific Content: Local & Global Impacts

CET-4250 Advanced Structural DesignAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 90% of Students

- Masonry Wall Design Exam Problem
- Reinforced Concrete Slab & Beam Design Exam Problem
- Reinforced Concrete Column Design Exam Problem
- Concrete Formwork Design Exam Problem

ABET/Student Outcomes: 1 & 2

Student Work Evidence

- Masonry Wall Design Exam Problem
- Reinforced Concrete Slab & Beam Design Exam Problem
- Reinforced Concrete Column Design Exam Problem
- Concrete Formwork Design Exam Problem

Program Criteria: c, d, g & i

Discipline Specific Content: Industry Standards & Codes

CET-4350 Soils, Foundations & Earth StructuresAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 90% of Students

- Shallow or Deep Foundation Problem
- Retaining Wall Design Problems

ABET/Student Outcomes: 1 & 2

Student Work Evidence

- Shallow or Deep Foundation Problem
- Retaining Wall Design Problems

Program Criteria: c & d

Discipline Specific Content: Industry Standards & Codes

CET-4460 Construction Management & SchedulingAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 90% of Students

- Final Project Schedule
- Midterm or Final Test on of CPM, time reduction, resource management project cost, and PERT
ABET/Student Outcomes: a & g

Student Work Evidence

- Final Project Schedule
- Midterm or Final Test on of CPM, time reduction, resource management project cost, and PERT
Program Criteria: a, b, c, d, e, f, h & i
Discipline Specific Content: Professional Responsibilities

ENGT-2000 Professional Development (CET student scores only)Assessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% cumulative success on the questions

- Communications Final Exam Problems
ABET/Student Outcomes: 3,

Student Work Evidence

- Resume' Second Draft Improvement
Discipline Specific Content: Local & Global Impacts
- Engineering Ethics Case Study Essay
Discipline Specific Content: Ethical Responsibilities
- Engineering Ethics Final Exam Problems
Discipline Specific Content: Ethical Responsibilities
- Diversity Final Exam Problems
Discipline Specific Content: Respect for Diversity

ENGT-3600 Engineering EconomicsAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 80% of Students

- Analytical Final Exam Problem
ABET/Student Outcomes: 1
- Replacement Analysis/Economic Service Life Problem
ABET/Student Outcomes: 1
- Economic Analysis Project
ABET/Student Outcomes: 1 & 3

Student Work Evidence

- Analytical Final Exam Problem
Program Criteria: a,d & f
- Replacement Analysis/Economic Service Life Problem
Program Criteria: a,d & f
- Economic Analysis Project
Program Criteria: a,d & f
Discipline Specific Content: Local & Global Impacts

ENGT-4050 Senior Project CapstoneAssessment Measures

Satisfactory Threshold Score: 80% (B Grade)

Attainment Level: 90% of Students

- Final Project Presentation
ABET/Student Outcomes: 1, 2, 3 & 5

EBI Senior Exit SurveyAssessment Measures

- Exit Interview
ABET/Student Outcomes: 1-5
Attainment Level: Averages will not significantly trail the peer groups surveyed.

CET Graduate & Employer SurveysAssessment Measures

- Various Questions
ABET/Student Outcomes: 1-5
Attainment Level: Average of all Annual Attainment Level:
Difference between perceived importance and preparedness will not be more than -0.5.

Co-op Student & Employer SurveysAssessment Measures

- Various Questions
ABET/Student Outcomes: 1-5
Attainment Level: The number of affirmative responses will exceed 70% for all categories.

**Construction Engineering Technology
Graduate Questionnaire (3 or 6 Year Alum)**

Name:
Contact Information:

Graduation Year:
E-Mail:

Positions Held (List most current First):			Salary Code History		
<u>Position</u>	<u>Employer</u>	<u>Dates</u>	<u>1 yr,</u>	<u>3yrs,</u>	<u>6yrs</u>
1. _____	_____	_____	___	___	___
2. _____	_____	_____	___	___	___
3. _____	_____	_____	___	___	___

Salary Code: A) <\$30,000 B) \$30,000 - \$40,000 C) \$40,000 - \$50,000
 D) \$50,000 - \$60,000 E) \$60,000 - \$70,000 F) \$70,000 - \$80,000 G) >\$80,000

Check the type of industry in which you are currently employed:

- | | |
|---|--|
| <input type="checkbox"/> General Contractor/Construction Mgr. | <input type="checkbox"/> Design Consultant |
| <input type="checkbox"/> Construction Component Sales/Manufacturing | <input type="checkbox"/> Governmental Agency |
| <input type="checkbox"/> Specialty Contractor (ME, Conc., Etc.) | <input type="checkbox"/> Facilities Mgmt./Owners Rep./PM |
| <input type="checkbox"/> Highway/ Utilities Contractor | <input type="checkbox"/> Testing Laboratory <input type="checkbox"/> Other (Explain) |

Looking back, how relevant was your educational preparation in the CET program to the type of work you have been doing in this industry?

Excellent, Good, Average, Marginal, Poor, No Opinion

Rank each curriculum area as it has been most helpful to you.

(Assign all of the areas a ranking 1-6 with 1= Most to 6= Least Helpful, **using each # only once.**)

Project Mgmt., Surveying, Graphics, Materials, Structural, Eng. Design

Rate how well prepared by the CET program you were in the following skills as they pertain to your current position. (1= Poor to 5= Excellent) Engineering Skills, PM Skills, Written Communications, Verbal Communications, Teamwork, Ethics.

Have you progressed in your position; gaining responsibility and leadership roles? Yes / No

Have you continued your education by (check all that apply) : Reading professional journals, Attending professional conferences, Taking professional courses, Attempting to obtain an advanced degree, Teaching or training in your organization?

Professional Registration/Certification

<u>Type</u>	<u>Year Passed</u>	<u># of Attempts</u>	<u>State</u>	<u>Comments/Type</u>
FE/PE	_____	_____	_____	
AIC-CPC	_____	_____	_____	
LEED-AP	_____	_____	_____	
Other	_____	_____	_____	

Any additional comments on what you think we should be adding to our program regarding new methods, technology or subjects? Please let us know. Thank you.

Construction Engineering Technology Graduate Employer Questionnaire (3 or 6 Year Alum)

In order to assess the abilities of our graduates, as their immediate supervisor, we would ask you to please complete this survey with regard to the following graduate of the University of Toledo Construction Engineering Technology Program. Please return this form to us through the graduate for which you are providing the review. Thank you.

Graduate Name: _____

Company Name: _____

Your Name & Job Title: _____

How long have you supervised this employee? _____

Would you hire another UT CET graduate in your company given the opportunity?

Yes No Why?

Rate how well prepared the CET graduate is in the following skills as they pertain to you're their current position. (1= Poor to 5= Excellent or NA = not applicable)

___ Engineering Skills

___ Project or Construction Management Skills

___ Written Communications

___ Verbal Communications

___ Teamwork

___ Ethics

Has the graduate progressed in their position while at your company? Yes / No / Somewhat

Gained responsibility? Yes / No / Somewhat

Taken leadership roles? Yes / No / Somewhat

Has the graduate shown evidence of being innovative? Yes / No / Somewhat

Has the graduate shown evidence of being a problem solver? Yes / No / Somewhat

Are there any skills or knowledge base that would have better prepared this graduate for successful employment in your company?

Thank you!!

Construction Engineering Technology Graduate Questionnaire (1 Year Alum)

Name: _____ Degree: BSCET Year: _____

Contact Information: _____ E-Mail: _____

Positions Held (List Most current First):

Position	Employer	Dates	Salary Code
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

Salary Code: A) \$30,000 - \$40,000 B) \$40,000-\$50,000 C) \$50,000 -\$60,000

D) \$60,000 - \$70,000 E) \$70,000 -\$80,000 F) >\$80,000

Contact information for current supervisor:

Check the type of industry in which you are currently employed:

<input type="checkbox"/> General Contractor/Construction Mgr.	<input type="checkbox"/> Design Consultant
<input type="checkbox"/> Materials/Component Mfg./Supply	<input type="checkbox"/> Governmental Agency
<input type="checkbox"/> Specialty Contractor	<input type="checkbox"/> Facilities Management
<input type="checkbox"/> Highway/Utility Contractor	<input type="checkbox"/> Testing Laboratory
<input type="checkbox"/> Design/Build Contractor	<input type="checkbox"/> Other (Explain)

How relevant to the type of work you have been doing in this industry was your education in the CET program?

Excellent __, Good __, Average __, Marginal __, Poor __, No Opinion __

Compare your education with those of your peers and co-workers from other schools.

Much Better __, Better __, Similar __, Worse __, Much Worse __, No Opinion __

Have you sought registration or certification from any professional organization? (FE, CPC, PMP, LEED, etc.) When did you do so? What was the result of your attempt?

Have you continued your education by taking other degrees or certification courses?

Considering the following major subject areas that the CET program emphasizes in its curriculum, rate (from 5 being the highest to 1 being the lowest) your perception as to the importance of each category in your current career position and how well prepared you were to work in each area because of the education you received in the UT CET Program. (Were you able to step right into the tasks you were handed or did it take additional training and education?)

Curriculum Area	Perceived Importance	Educational Preparedness	Comments on Items Well Prepared/Lacking
Survey Applications	_____	_____	
Project Management	_____	_____	
Materials	_____	_____	
Graphics/Plan Preparation	_____	_____	
Structural Design	_____	_____	

Considering the following 5 criteria that ABET requires of graduates in programs to which it gives accreditation, rate (from 5 being the highest to 1 being the lowest) your perception of the importance of each item and how well prepared you were in each of these areas because of the education you received in the UT CET Program.

<u>Perceived Importance</u>	<u>Educational Preparedness</u>	
_____	_____	An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.
_____	_____	An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
_____	_____	An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
_____	_____	An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
_____	_____	An ability to function effectively as a member as well as a leader on technical teams.

Considering the criteria to which you responded above, describe your ability, knowledge and understanding pertaining to your educational preparedness when viewing a recent project that you have been involved in at your place of employment. What were you well prepared for? What were you not prepared for?

Looking back at your educational experience, what if anything would you modify in the CET program that would have helped you more in your career?

Add courses in: _____

Delete courses in : _____

Improve lab & equipment in : _____

Improve instruction in: _____

Improve advising & counseling in: _____

Additional Comments:

Thanks!

Construction Engineering Technology Graduate Employer Questionnaire (1 Year Alum)

In order to assess the abilities of our graduates, as their immediate supervisor, we would ask you to please complete this survey with regard to the following graduate of the University of Toledo Construction Engineering Technology Program. Please return this form in the self-addressed stamped envelope provided to the graduate. Thank you.

Graduate Name: _____

Business Name: _____

Business Address: _____

Your Name & Job Title: _____

How long have you supervised this employee? _____

Would you hire another UT CET graduate in your company given the opportunity?

Yes

No

Why?

Considering the following major subject areas that the CET program emphasizes in its curriculum, rate (**from 5 being the highest to 1 being the lowest**) your perception as to the importance of each category in their current career position and how well prepared they are to work in that area as a result of their education in the UT CET Program. (Was the employee able to step right in to the tasks handed them or was additional training required?)

<u>Curriculum Area</u>	<u>Perceived Importance</u>	<u>Educational Preparedness</u>	<u>Comments on Items Well Prepared/Lacking</u>
Survey Applications	_____	_____	
Project Management	_____	_____	
Materials	_____	_____	
Graphics/Plan Preparation	_____	_____	
Structural Design	_____	_____	
Overall		_____	

Considering the following 5 criteria that ABET requires of graduates in programs to which it gives accreditation, rate **(from 5 being the highest to 1 being the lowest)** your perception of the importance of each item and how well prepared this employee is in each of these areas because of the education they received in the UT CET Program.

<u>Perceived Importance</u>	<u>Educational Preparedness</u>	
_____	_____	An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.
_____	_____	An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
_____	_____	An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
_____	_____	An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
_____	_____	An ability to function effectively as a member as well as a leader on technical teams.

Additional comments on the educational preparedness of this employee: