Environmental Engineering Technology | 2016-2017 Assessment Plan

1. Please review last year's assessment results (2015-2016) as well as the Academic Program Assessment Report with the faculty in your program. How does your program plan to take these results into consideration in future programmatic planning?

   Because last year was the first year of assessment for the three Engineering Technology BS programs, no major curricular changes are being implemented as a direct result of assessment. We are, however, initiating curricular changes to the Mechanical Engineering Technology BS that includes combining ET 106 and ET 207, Parametric Modeling I and II, into a single ET 207 Parametric Modeling course. Both ET 106 and ET 207 are two credit courses and the revised ET 207 will be a 3 credit course, reducing the number of credits by one overall. ET 142, Introduction to Programming, will be added to the Mechanical Engineering Technology. This will increase the credit requirement by 3, for a net increase of 2 credits.

2. Please review your program's Learning Outcomes. Do any of them need to be updated or clarified?

   Because the three Engineering Technology programs are using ABET student learning outcomes a-k for assessment, no changes to learning outcomes will be made. We have reviewed the assessment grid and made changes in terms of which learning outcomes will be assessed in which courses. The new assessment grids are included as Appendix A of this report.

   a. Please provide brief indications of the kinds of assessment that <u>might</u> be used to assess each outcome.

      Assessment of the ABET learning outcomes has been achieved via an array of assignments across the curriculum. This includes targeted exam questions, term papers, course projects, oral and written presentations of internship experiences, performance assessment from internship field supervisors.

      ABET Criterion 3 Student Learning Outcomes (time of graduation) with ours under the applicable one

      a. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities
      b. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies

c. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
d. An ability to design systems, components, or processes for broadly defined engineering technology problems appropriate to program educational outcomes
e. An ability to function effectively as a member or leader on a technical team
f. An ability to identify, analyze, and solve broadly defined engineering technology problems
g. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
h. An understanding of the need for and an ability to engage in self-directed continuing professional development
i. An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
j. A knowledge of the impact of engineering technology solutions in a societal and global context
k. Commitment to quality, timeliness, and continuous improvement.

b. Please compare your Learning Outcomes to the University's main learning objectives. Which programmatic outcomes match university mission outcomes?

The ABET learning outcomes for engineering technology match the outcomes of interdisciplinary; problem-focused education; critical thinking; diversity; environmental sustainability; end engaged citizen as follows.

Problem focused education aligns with ABET learning outcomes a, b, c, and e.
Critical thinking aligns with ABET a, b, and i.
Diversity aligns with ABET h.
Environmental sustainability aligns with ABET i.
Engaged citizen aligns with ABET h and i.

3. Which outcome will you assess this year (2016-2017)?

Per ABET requirements, all of them will be assessed.

4. Which technique will you use to assess this outcome?

Assessment of the ABET learning outcomes will be performed via an array of assignments across the curriculum. This includes targeted exam questions, term papers, course projects, oral and written presentations of internship experiences, performance assessment from internship field supervisors.

5. Which course or group of students will you assess on the outcome chosen above and when?

ABET requires all learning outcomes to be assessed at both the upper and lower level, hence students from freshmen through seniors will be assessed. Because assessment will be performed only in required courses for the major, all engineering technology students will be assessed. Some environmental engineering technology courses are cross listed with environmental science courses and if this is the case, all students in the course will be assessed.

A grid showing which learning outcomes will be assessed in which courses for each of the three engineering technology majors is given below in Appendix A.

Appendix A: Assessment grid for ABET Student Learning outcomes a-k for each of electrical, mechanical, and environmental engineering technology.

ABET Criterion 3 Student Learning Outcomes (time of graduation) with ours under the applicable one:

l. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities

m. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies

n. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes

o. An ability to design systems , components, or processes for broadly defined engineering technology problems appropriate to program educational outcomes

p. An ability to function effectively as a member or leader on a technical team

q. An ability to identify, analyze, and solve broadly defined engineering technology problems

r. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

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

t. An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity

u. A knowledge of the impact of engineering technology solutions in a societal and global context

v. Commitment to quality, timeliness, and continuous improvement

Electrical Engineering Technology Assessment

Outcomes Courses	A	B (1)	C (3)	D (2)	E (6)	F	G (4)	H	I (5)	J	K
ET 101 Intro. to ET UM, JT fall								x	x	x	x
ET 105 Drawing RH fall	x										
ET 130 Circuits 1 UM fall		x									
ET 131 Circuits 2 UM spr			x	x			x				
ET 142 Programming MH fall						x					
ET 150 Codes, Safety, Standards NWTC fall											
ET 232 Semi-conductors NWTC spr											
ET 233 Linear Circuits NWTC fall											
ET 240 Micro-controllers & PLCs JT spr					x						
ET 250 Signals & Systems MH spr											
ET 211 Digital Electronics NWTC fall											
ET 324 Motors & Drives UM spr		x				x					
ET 340 Advanced PLCs MH fall				x							
ET 342 Supervisory Control UM fall											
ET 344 Human machine Interface MH spr											
ET 346 Electric Power Systems MH spr											
ET 348 Electromag. Fields & Apps. MH fall											
ET 350 Data Comm. & Protocols UM fall											
ET 360 Project Management RH spr									x		
ET 390 Mechatronics DY spr	x				x					x	
ET 400 Internship ET 410 Capstone PT			x				x	x			x

Environmental Engineering Technology Assessment

Outcomes Courses	A	B (1)	C (3)	D (2)	E (6)	F	G (4)	H	I (5)	J	K
ET 101 Intro. to ET UM, JT fall								x	x	x	x
ET 103 Surveying RH fall		x			x						
ET 105 Drawing RH fall	x										
ET 118 Fluids 1 RH spr			x			x					
ET 201 Intro. to Air PT spr											
ET 202 Intro. to Solid Waste PT spr											
ET 203 Intro. to Water and Waste Water RH fall				x			x				
ET 330 Hydrology PT fall		x			x					x	
ET 360 Project Management RH spr									x		
ET 391 GIS Chris Houghton spr											
ET 464 Atm. Poll. PT ET 334 Solid Waste PT ET 331 W & WW RH spr	x			x		x					
ET 400 Capstone ET 410 Internship PT			x				x	x			x

Mechanical Engineering Technology Assessment

ABET Outcomes Courses	A	B (1)	C (3)	D (2)	E (6)	F	G (4)	H	I (5)	J	K
ET 101 Intro. to ET UM, JT fall								x	x	x	x
ET 105 Drawing RH fall	x										
ET 106 Parametric Model 1 NWTC fall											
ET 130 Circuits 1 UM fall		x									
ET 206 Chemistry for Engineers DY fall							x				
ET 207 Parametric Model 2 JT spr				x							
ENGR 213 Statics PT fall										x	
ENGR 214 Dynamics Mike Hencheck spr											
ET 220 Mechanics of Materials JT spr											
ET 221 Machine Components JT fall											
ET 116 Basic Manufacturing Processes Ad-hoc spr											
ET 118 Fluids 1 RH spr			x			x					
ET 318 Fluids 2 DY fall											
ET 308 Finite Element Analysis JT fall		x									
ET 324 Motors & Drives UM spr		X				x					
ENGR 301 Materials Science DY spr					x						
ET 322 Design Problems DY spr				x							
ET 360 Project Management RH spr									x		
ET 390 Mechatronics DY spr	x				x					x	
ET 400 Internship ET 410 Capstone PT spr			x				x	x			x