Institutional Effectiveness Report 2021-22

Program:BSin Engineering Technolo

College and Department: College of Engineering Manufacturing & Engineering Technology

Contact:Dr. Fred Vondra

Mission: To graduate innovative Applied Engineers who solve technological challenges to meet societal needs.

The BSET program at TTU is a traditionadampus lecture/laboratory program with aground and hybrid course delivery offered almost exclusively during the day. There are

- 1. attain and succeed in positions related to Mechatronics Engineering Technology and Engineering Technology Management;
- 2. advance their careers and continue their professional development by pursuing graduate studies, attending workshops, obtaining certification and **joig** professional organizations;
- 3. succeed as leaders and managers in areas such as foundry operations, additive manufacturing, robotics, and industrian hanagement.

Student Learning Outcomes

- 1. An ability to apply knowledge, techniques, skills and modern to the same technology to solve broadly fined engineering problems appropriate to the discipline;
- 2. An ability to design systems, components, or processes meeting specified needs for-**blefard** and **blefard** and
- 3. An ability to apply written, oral, and graphical communication in bro**addi**yned technical and non technical environments; and an ability to locate and apply appropriate technical literature;
- 4. An ability to conduct standard tests, and surements, 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-**ftrosti**onal teams toward a common goal.

A departmentally developed curriculum map can be found in Appendix 1 that shows the connections between courses and student learning outcomes.

Assessment Methods:

 Alumni Survey: Indirect Assessment Tool: Historically, alumni surveys have been used for program assessments since the first NationasAciation of Industrial Technology (NAIT) accreditation in 1982. The department has administered the assessment instruments, analyzed and summarized the program improvement, as well as a source of supporting feedback on the student performance. After receiving the feedback from the students, issues of particular or repeated concern are brought to the MET faculty for further discussion and possible action.

Expected Level of Attainment of the Student Outcomes

The expected level of attainment of the student outcomes is considered using the sponing the sponing the sponing the sponing the sponing to the individual assessment tools.

4 = Excellent

3 = Good

2 = Satisfactory

1 = Low

0 = Negligible

Referring to the above scale, a score of 3.0 or above is a desirable score for each student outcome (1) (5). A score between 2.0 and 3.0 is a cause for review by the MET faculty with possible action or continued monitoring. A score lower than 2.0 would require corrective action to be taken by the MET Faculty.

Results:

Student 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.

SO 1An ability to apply knowledge, techniques, skills and modern tools of mathematics, sc engineering, and technology to solve broadly fined engineering problems appropriate to the

Student Outcome 2: An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

Assessment Instrument	Fall 2019	Spring 2020	2020-21	2021 -2 2			
Faculty Course Assessment Reports	3.29	3.29	3.41				
Course Term Project External Evaluation	3.45	3.79	3.74	3.56			
Courseembedded Assessment	3.12	3.39	3.40	3.70			
Senior Design Project (External)	3.37	3.45	3.68	3.32			
Senior Design Project (Internal)			3.23				
Senior Exit Survey		3.09	3.58	3.27			
Alumni Survey		2.39					

SO 2. An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline.

Assessment Data (Level of Attainmer#t)= Excellent; 3 = Good; 2 = Satisfactory; 1 = Low; 0 = Negligible

Student Outcome 3: An ability to apply written, oral, and graphical communication in broadly-defde de i o 5:(y) J @ Tw 3@

Student Outcome 4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

SO 4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.							
Assessment Instrument	Fall 2019	Spring 2020	2020-21	2021 -2 2			
Faculty Course Assessment Reports	3.0	3.0	3.5				
Courseembedded Assessment	3.29	3.14	3.06				
Senior Design Project (External)	3.27	3.35	3.63	3.11			
Senior Design Project (Internal)			3.15				
Senior Exit Survey		2.72	3.61	3.38			
Alumni Survey		2.77					

Assessment Data (Level of Attainmert) Excellent; 3 = Good; 2 = Satisfactory; 1 = Low; 0 = Negligible

Modifications for Continuous Improvement

Student 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.

Departmental Assessment Committee will continue to monitor the attainme Strodent Outcome 1. Partial Data was colleed in 20212022. More data will be collected in 202023 cycle. A new Alumni Survey will be administered 2023. The following list provides a partial list of the actions taken in-2021 2022.

Time Frame for Action	Actions Taken	Person Responsible	Results of Changes (2021-22 in Comparison to 2020-21)	Action Status
2021- 2022	MET4220 Industrial Automation and Robotics.One Collaborative robot (Rethink Sawyer) donated by Centro, Inc.were installed in the MET203, offering more handson experience to students. Students can apply the on/offline robot programs manufacturing processes.	Duckbong Kim		Completed
2021- 2022	MET3060 course was converted to Flipped Classroom model. Recorded contents were provided to students. Class time was used for more Q&As and Problem Solutions	Ismail Fidan	Attainment of Student Outcomes was high as it could be seen from the course embedded assessment	Completed

Action Items Taken to Improve SO1200212022

Student Outcome 4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

Departmental Assessment Committee will continue to monitor the attainment of Student Outcome 4. Partial Data was collected in 20**20**22. More data will be collected in 20**20**23 cycle. A new Alumni Survey will be administered **20**23. The following list provides a partial list of the actions taken in-2021 2022.

Time Frame for Action	Actions Taken	Person Responsible	Results of Changes (2021-22 in Comparison to 2020-21)	Action Status
2021- 2022	A portable 7axis coordinate measuring machine (CMM), Hexagon Romer Arm 7525SIE, was installed in the MET machine shop. Students were able to compare the volumetric errors between designed and measured outcomes in terms of geometric dimensioning and tolerancing (GD&T).	Duckbong Kim s d		Completed

Action Items Taken to Improve SO4 in Fall 2020 and Spring 2021.

Survey will be administered 2023. The following list provides a partial list of the actions taken in-2021 2022.

Appendix 1: Curriculum Map



Latest MET Curriculum

CATALOG YEAR:	2022-2023		Degree: RSF	г	MAIC	R: Engineerioe	Technology
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