Institutional Effectiveness Report
2021-22

Program: BS in Engineering Technology (ET)

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 traditional on-campus lecture/laboratory program with on-ground and hybrid

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

Assessment Methods:

1. *Alumni Survey: Indirect Assessment Tool:* Historically, alumni surveys have been used for program assessments since the first National Association 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 same 4-point scale used for 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-defined 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;

SO 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	2021-22
Faculty Course Assessment Reports	3.29	3.29	3.41	
Course Term Project External Evaluation	3.45	3.79	3.74	3.56
Course-embedded 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		

Assessment Data (Level of Attainment): 4 = 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)]TJ 0 Tw 0.30

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	2021-22
Faculty Course Assessment Reports	3.0	3.0	3.5	
Course-embedded 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 Attainment): 4 = 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 attainment of Student Outcome 1. Partial Data was collected in 2021-2022. More data will be collected in 2022-2023 cycle. A new Alumni Survey will be administered in 2023. The following list provides a partial list of the actions taken in 2021-2022.

Action Items Taken to Improve SO1 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 MET 203, offering more hands-on 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 video lectures 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

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

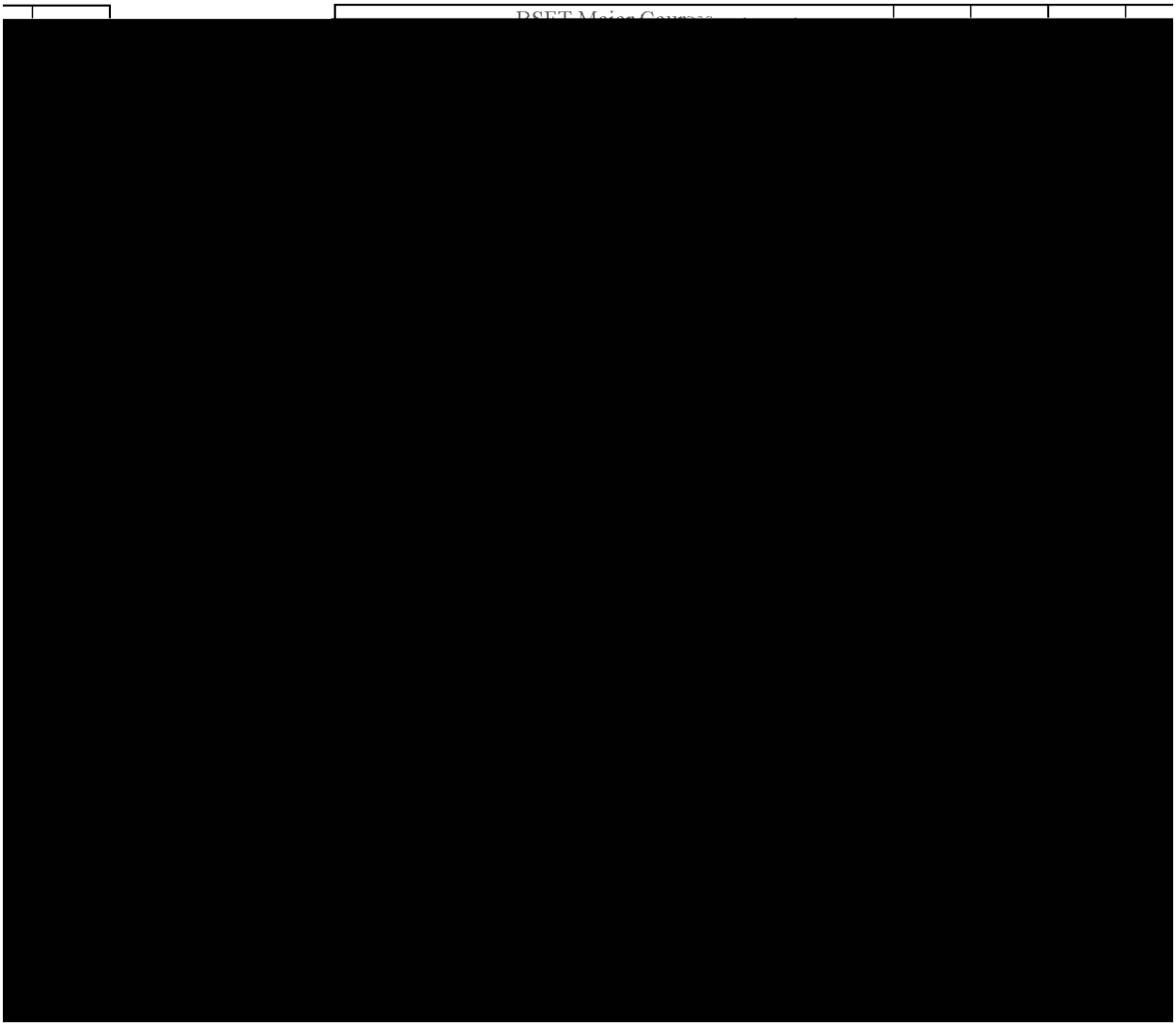
Departmental Assessment Committee will continue to monitor the attainment of Student Outcome 4. Partial Data was collected in 2021-2022. More data will be collected in 2022-2023 cycle. A new Alumni Survey will be administered in 2023. The following list provides a partial list of the actions taken in 2021-2022.

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

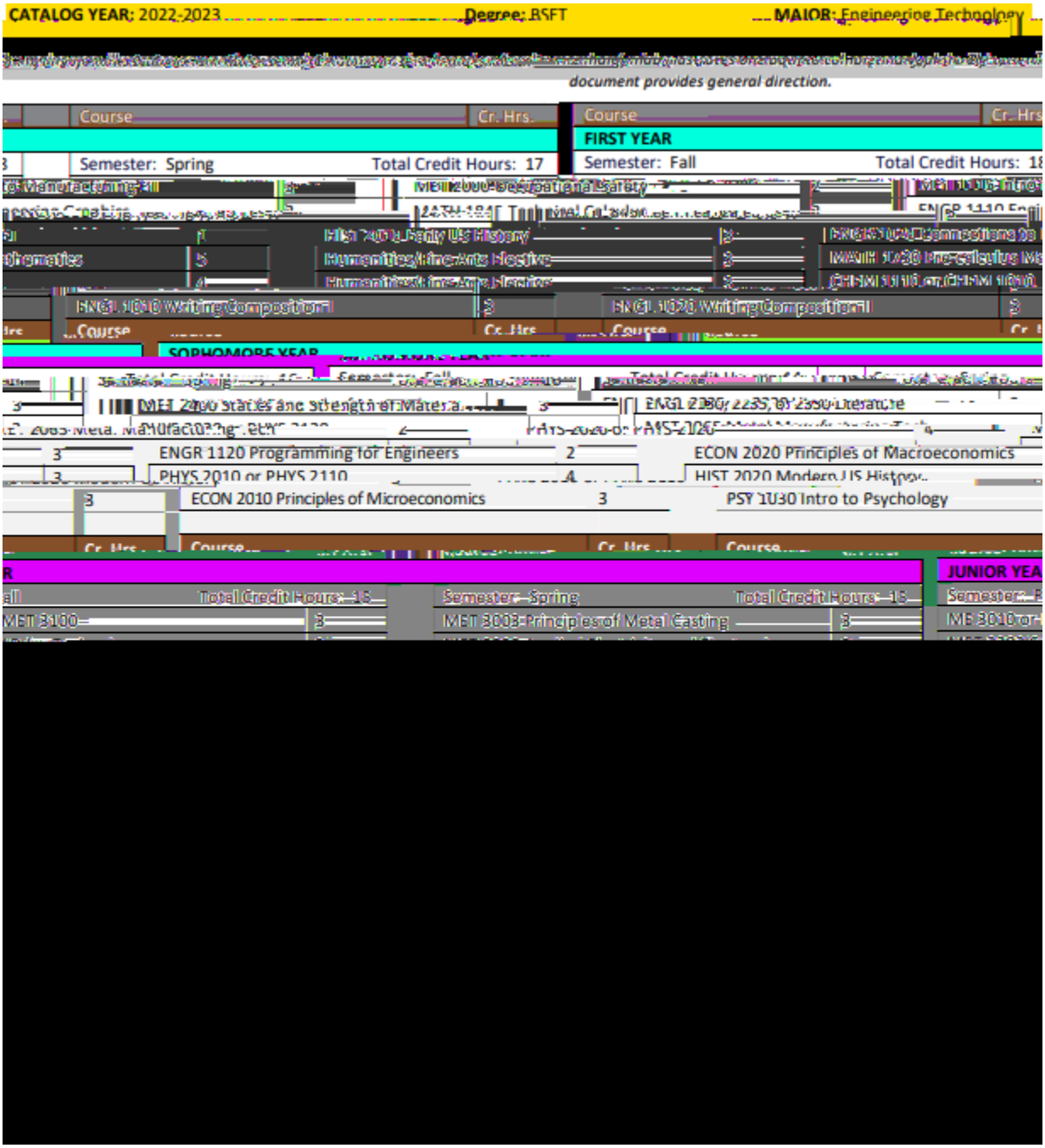
Time Frame for Action	Actions Taken	Person Responsible	Results of Changes (2021-22 in Comparison to 2020-21)	Action Status
2021-2022	A portable 7-axis coordinate measuring machine (CMM), Hexagon Romer Arm 7525SIE, was installed in the MET machine shop. Students were able to compare the volumetric errors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

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

Appendix 1: Curriculum Map



Latest MET Curriculum



Concentration: Management