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 course delivery offered almost exclusively during the day. There are also a few distance learning courses offered by the Manufacturing and Engineering Technology Department. A co-op program is available through the Center for Career Development as an optional (but popular) choice.

Program Goals:

Graduates of the B.S. in ET Program will

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 joining professional organizations;

3. succeed as leaders and managers in areas such as foundry operations, additive manufacturing, robotics, and industrial management.

Student Learning Outcomes

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 locate and apply 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 cross-functional 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:

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 data, and presented the summary to the faculty for discussions, suggestions, and identification of necessary actions. The format of the alumni survey, which has been recently updated, is designed to assess ETAC of ABET Student Outcomes (1)-(5) and provide information related to the Program Educational Objectives. The survey is conducted every three years to evaluate the professional growth of our graduates.

   The alumni survey employs a 5-point "agree/disagree" scale (1 to 5), which is later converted to a 0-4 level-of-attainment scale by simply subtracting 1 point.

2. *Co-op Employer Survey: Direct Assessment Tool*: Around one-fifth of MET students participate in co-ops or internships during their time at Tennessee Tech. For co-op jobs sponsored through the Tennessee Tech's Center for Career Development, the co-op employers are required to complete a formal evaluation of the performance of each student at the end of each co-op semester. In addition, employers of College of Engineering students are asked to respond to additional assessment questions, some of which are related to Student Outcomes. Co-op surveys are a valuable source of feedback directly from employers of our students, providing insight into their performance in-process, i.e., before they graduate. The co-op employer survey employs a 5-point scale (1 to 5), which is then converted to the 0-4 level-of-attainment scale.

3. *External Assessment of Senior Projects: Direct Assessment Tool:* This assessment method was first introduced in Spring 2014 after the decision to pursue ETAC of ABET accreditation was made. The Manufacturing and Engineering Technology Advisory Board (METAB) members are used as external evaluators to assess the senior project presentations. A new evaluation form was developed for this purpose. The external evaluation of senior projects assessment tool uses the 0-4 level of attainment scale.

4. *Faculty Course Assessment Report (FCAR): Indirect Assessment Tool:* This assessment tool was added in Spring 2014 after the decision was made to pursue ETAC of ABET accreditation. This measurement tool provides an assessment of the level-of-attainment of the students in a class with regard to the course's instructional outcomes. The assessment is done by the course instructor at the completion of the course. Each of the instructional outcomes associated with a student outcome is scored on the faculty course assessment Report using a 0-4 level-of-attainment scale.

5. *Graduating Senior Exit Surveys/Interviews: Indirect Assessment Tool:* A written survey is one part of the Graduating Senior Exit Interview process. The Senior Exit Survey for the BSET program allows graduating seniors to provide feedback regarding the faculty, the department, the career services, and their perceived attainment of the ETAC of ABET Student Outcomes. The Graduating Senior Exit Survey uses a 1-5 "satisfaction" scale, which is then converted to the 0-4 level-of-attainment scale. The second part of this survey process is that each graduating senior schedules an interview meeting with the department chair. In this confidential interview meeting, the chair discusses with the students their responses. The gathered information serves as a valuable source of suggestions for

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 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.					
Assessment Instrument	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Co-op Employer Survey	3.47	3.2	3.75	3.15	3.2
Faculty Course Assessment Reports			3.40	3.88	
Course Term Project External Evaluation			3.63	3.79	3.72
Course-embedded Assessment			3.44	3.49	3.56
Senior Design Project (External)			3.56	3.63	3.41
Senior Design Project (Internal)				3.42	3.41
Senior Exit Survey			3.54	3.74	
Alumni Survey			2.69		

Assessment Data (Level of Attainment): 4 = Excellent; 3 = Good; 2 = Satisfactory; 1 = Low; 0 = Negligible

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-defined technical and non-technical environments; and an ability to locate and apply appropriate technical literature.

SO 3. An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to locate and apply appropriate technical literature.					
Assessment Instrument	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Co-op Employer Survey	2.67	3.30	3.00	3.05	3.07
Faculty Course Assessment Reports			3.39	3.41	
Course Term Project External Evaluation			3.49	3.73	3.64
Course-embedded Assessment			3.58	3.65	3.70
Senior Design Project (External)			3.34	3.52	2.89
Senior Exit Survey (Internal)				3.5	3.27
Alumni Survey			2.62		

Assessment Data (Level of Attainment): 4 = Excellent; 3 = Good; 2 = Satisfactory; 1 = Low; 0 = Negligible

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

Student Outcome 5: An ability to function effectively as a member as well as a leader on cross-functional teams toward a common goal.

SO 5. An ability to function effectively as a member as well as a leader on cross-functional teams toward a common goal.					
Assessment Instrument	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Co-op Employer Survey	3.47	3.76	3.38	3.4	3.36
Faculty Course Assessment Reports			3.67	3.92	
Course Term Project External Evaluation			3.61	3.79	3.64
Course-embedded Assessment			3.75	3.46	3.70
Senior Design Project (External)			3.45	3.63	3.58
Senior Design Project (Internal)				3.28	
Senior Exit Survey			3.45	3.82	3.52
Alumni Survey			2.62		

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

Departmental Assessment Committee will continue to monitor the attainment of Student Outcome 2. 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 SO2 in 2021-2022

Time Frame for Action	Actions Taken	Person Responsible	Results of Changes (2021-22 in Comparison to 2020-21)	Action Status
2019-2020 and 2020-2021	MET3301 CAD for Technology was a 2-credit course. In Spring 2020, the faculty revised the curriculum to change the course to MET3303, a 3-credit course to improve students' design skills.	MET Faculty	The MET 3301 FCAR SO2 result in Fall 2019 was 3.00. The MET 3303 FCAR result in Fall 2020 was 3.00.	Completed. MET 3303 was offered in Fall 2020.
2020-2021	MET3303: SolidWorks was incorporated to increase 3D design experience, using solid modeling, innovation, and techno-entrepreneurship skills.	Ismail Fidan		In-progress: At the retreat meetings on May 14-21, 2021, faculty decided that more implementation will continue in AY2021-2022.
2021-2022	Water Jet Machine was purchased for the departmental use. MET3060 students might use it.	Ismail Fidan	Future work.	In-progress.

Student Outcome 3: An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to locate and apply appropriate technical literature.

Departmental Assessment Committee will continue to monitor the attainment of Student Outcome 3. 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 SO3 in Fall 2021 and Spring 2022.

Time Frame for Action	Actions Taken	Person Responsible	Results of Changes (2021-22 in Comparison to 2020-21)	Action Status
2020-2021 (Spring 2021)	MET students worked with English Department graduate assistant assigned to the College of Engineering (Ms. Sarah Moore) to improve their technical communication and writing skills, especially for MET4620 Senior Projects.	Josh Qualls previously, now Mike Baswell		In-process: At meetings on May 14-21, 2021, the faculty decided that more implementation will occur in AY2021-2022.
2020-2021	Topics were given to the students in MET 1100 to perform preliminary research and write a report with the findings. A list of guidelines was also provided to the students for reference. In MET 3403 and MET 3303, students were required to work on computer software such as Solidworks and AutoCAD, and to submit reports with technical analysis.	Venkata Avinash Paruchuri	An impact on assessment results is not expected until these students advance to their senior year.	In-process: At meetings on May 14-21, 2021, the faculty decided that more implementation will occur in AY2021-2022.
2021-2022	Turnitin Software tool was used to teach and train the students in ethics and professionalism. Students practiced gaining the professional writing skills and originality	Ismail Fidan	Continuing in MET4310	In progress

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
2021	In MET 4550, the project included aspects of designing the model in Solidworks, printing the model using 3D printing, metal casting the part in foundry using 3D print as a pattern, and testing the final products for surface roughness using a profilometer. In addition, students studied various parameters that govern the quality of 3D printing and metal casting. Upon completion of the project, students analyzed the data collected during the study, and presented and submitted their findings as a report. A faculty committee with Dr. Vondra, Dr. Fidan and Dr. Paruchuri was present at these presentations to evaluate student performance.	Venkata Avinash Paruchuri	FCAR SO4 assessment results were 4.00 for this new course.	In-progress: At the retreat meetings on May 14-21, 2021, faculty decided that more implementation will occur in AY2021-2022.

Student Outcome 5: An ability to function effectively as a member as well as a leader on cross-functional teams toward a common goal.

Departmental Assessment Committee will continue to monitor the attainment of Student Outcome 5. 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 SO5 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
2020-2021	MET4000 Advanced Foundry Technology Assignment involved scanning an existing tool (pattern) using the Hexagon arm to incorporate solidification modeling (Altair Inspire Cast). This was being done to evaluate an existing gating design to troubleshoot potential defects. Teams created different capabilities for leadership, data collection, data analysis, and reporting.	Fred Vondra		Completed
2021-2022	MET4620 Senior Project: Students learned how to manage the project tasks and deliverables in virtual team environments (e.g., Zoom, YouTube, and Teams) with respect to the COVID-19 guidelines.	Mike Baswell		Completed

Appendices

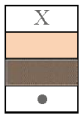
1. Curriculum Map

Appendix 1: Curriculum Map

Table 4.2b. Mapping of BSET Curriculum to the ETAC of ABET Student Outcomes

BSET Major Courses (Updated 5-14-2020)	SO 1	SO 2	SO 3	SO 4	SO 5
MET 1100 - Intro. To Manufacturing Engineering Tech.	X	X	X		
MET 2000 - Occupational Safety	X	X	X	X	
MET 2065 - Metal Manufacturing Technology	X	X			
MET 2310* - Applied Fluid Power	X	X	X		
MET 2400 - Statics and Strength of Materials	X	X	X	X	X
MET 2615 - Engineering Ethics and Professionalism	X	X	X		X
MET 3000 - Principles of Metal Casting		X		X	
MET 3100 - Applied Physical Metallurgy	X	X	X	X	
MET 3150 - Maintenance Technology 1	X	X	X		X
MET 3200 - Applied Electricity and Electronics	X	X			
MET 3301 - CAD for Technology		X●	X●		X●
MET 3403 - Applied Machine Elements	X	X	X	X	
MET 3700 - Manufacturing Cost Estimating	XX	X	X	X	
MET 3710 - Methods Design and Work Meas.	X	X	X	X	
MET 4310 - Plant Layout and Materials Handling		X●	X●		X●
MET 4620 - Senior Projects	X	X	X	X	X
Concentration I - Mechatronics Engr. Tech. 15 cr.					
MET 3060 - CNC Machining Practices (required)	X●	X●	X●		X●
MET 3260 - Industrial Electronics (required)	X	X	X		X
MET 4250 - Applied Mechatronics (required)	X	X	X		
MET 4000** - Advanced Foundry (elective)	X	X	X		X
MET 4210** - Programmable Logic Controllers (elective)	X	X	X		
MET 4220 - Ind. Automation and Robotics (elective)	X	X	X		
Concentration II - Engr. Tech. Mgmt. 15 cr.					
MET 4650 - Lean Six Sigma Mfg. (required)	X	X	X	X	
Select 4 courses from MET and Business elective courses					

*MET 2310 - Applied Fluid Power will not be offered any more from Fall 2020.
**MET 4000 - Advanced Foundry will be offered in Fall 2020.
**MET 4210 – Programmable Logic Controllers will be offered in Fall 2020.



X Courses address the student outcomes
Courses used for the FCAR
Courses used for Course-embedded Assessment
● Courses used for Course Term Project External Evaluation

Latest MET Curriculum

CATALOG YEAR: 2022-2023 **Degree:** BSET **MAJOR:** Engineering Technology

The major map illustrates one path to completing your major, based on faculty members' advice on course sequence and course schedule. This document provides general direction.

Course	Cr. Hrs.		Course	Cr. Hrs.
FIRST YEAR				
Semester: Fall	Total Credit Hours: 18		Semester: Spring	Total Credit Hours: 17
MET 1115 Intro to Manufacturing ET	3		MET 2000 Occupational Safety	2
ENGR 1110 Engineering Graphics	2		MATH 1845 Technical Calculus	3
ENGR 1020 Connections to ET	1		HIST 2010 Early US History	3
MATH 1730 Pre-calculus Mathematics	5		Humanities/Fine Arts Elective	3
CHEM 1110 or CHEM 1010	4		Humanities/Fine Arts Elective	3
ENGL 1010 Writing Composition I	3		ENGL 1020 Writing Composition II	3
Course	**Cr. Hrs.**		**Course**	**Cr. Hrs.**
SOPHOMORE YEAR				
Semester: Fall	Total Credit Hours: 14		Semester: Spring	Total Credit Hours: 16
ENGL 2130, 2235, or 2330 Literature	3		MET 2400 Statics and Strength of Material	3
MET 2065 Metal Manufacturing Tech	2		PHYS 2020 or PHYS 2120	4
ENGR 1120 Programming for Engineers	2		ECON 2020 Principles of Macroeconomics	3
PHYS 2010 or PHYS 2110	4		HIST 2020 Modern US History	3
ECON 2010 Principles of Microeconomics	3		PSY 1030 Intro to Psychology	3
Course	**Cr. Hrs.**		**Course**	**Cr. Hrs.**
JUNIOR YEAR				
Semester: Fall	Total Credit Hours: 15		Semester: Spring	Total Credit Hours: 15
ME 3010 or MET 3100	3		MET 3003 Principles of Metal Casting	3
MET 3303 CAD for Technology	3		MET 3200 Applied Electricity and Electronics	3
MET 3713 Methods Design and Work Meas	3		MET 3403 Applied Machine Elements	3
ACCT 3720 Survey of Accounting	3		COMM 2025 or PC 2500 Comm	3
BMGT 3510 Mgmt and Org Behavior	3		ECON 3610 Business Statistics I	3
Course	**Cr. Hrs.**		**Course**	**Cr. Hrs.**
SENIOR YEAR				
Semester: Fall	Total Credit Hours: 14		Semester: Spring	Total Credit Hours: 15
MET 3150 Maintenance Technology I	2		MET 4620 Senior Projects	3
Area of Concentration[2]	3		Area of Concentration[2]	3
Area of Concentration[2]	3		Area of Concentration[2]	3
FIN 3210 Principles of Managerial Finance	3		Area of Concentration[2]	3
MKT 3400 Principles of Marketing	3		LAW 2810 Business in Legal Env and Ethics	3

Notes:

1. ENGR 1020 does not count as part of the 123 credit hours BSET degree program
2. Select one of the following concentrations
    a. Mechatronics Engineering Technology
        i. Required: MET 3060, MET 3720, MET 4250 (5250)
        ii. Select two: MET 4000, MET 4210 (5210), MET 4220 (5220), or MET 4990 (5990)
    b. Engineering Technology Management
        i. Required: MET 4310 (5310), MET 4550 (5550), MET 4650 (5650)
        ii. Select two: MET 3703, MET 4600 (5600), MET 4990 (5990)

Concentration: Mechatronics

2022-2023 TTU MET Dept: BSET Flowchart

Unofficial

See TTU Undergraduate Catalog for official curriculum statement.

Freshman

None
ENGL 1010 (3)
Writing 1
None

ENGR 1020 (1)
Connections to Engr.
None

ENGR 1110 (2)
Engr. Graphics

None
MET 1115 (3)
Intro to MET
None

None
MATH 1730 (5)
Pre- Calculus 1
None

None
CHEM 1110 (4)
or
CHEM 1010 (4)
None

ENGL 1010
(C or better)
ENGL 1020 (3)
Writing 2
None

HUFA 1 (3)

HUFA 2 (3)

None
MET 2000 (2)
Occupational Safety
None

None
HISTORY 2010 (3)
None

MATH 1730 (C or better)
MATH 1845 (3)
Technical Calculus
None

Sophomore

ENGL 1020 (C or better)
LITERATURE (3)
None

Math 1730
ENGR 1120 (2)
Programming for Engineers

Math 1730, ENGR 1110, MET 1100
MET 2065 (2)
Metal Manuf
None

None
ECON 2010 (3)
None

None
PHYS 2010 (4)
Or 2110
None

None
PSY 1030 (3)
Intro to Psy
None

None
ECON 2020 (3)
None

MATH 1730, PHYS 2010
MET 2400 (3)
Statics & Strength of Material
None

PHYS 2010 or PHYS 2110
PHYS 2020 (4)
Or 2120
None

None
HISTORY 2020 (3)
None

Legend for Flowchart:

Prerequisites
Course Number
Course Title
Co-requisites

Junior

MET 1100, CHEM 1010 or CHEM 1110
MET 3100 (3) Or ME 3010
None

Junior Standing
ACCT 3720 (3)
Survey of Accounting
None

Sophomore Standing
BMGT 3510 (3)
Management
None

ENGR 1110
MET 3303 (3)
CAD for Technology
None

MET 1100, MET 2000, MET 2065, MET 2615
MET 3713 (3)
Methods Design
None

ENGL 1020
PC 2500 (3) OR COMM 2025
None

MATH 1710 (C or better)
MATH 3070 (3)
Statistical Methods
None

ENGR 1110, MET 1100, MET 3100 or ME 3010
MET 3003 (3)
Metal Casting
MET 3100 or ME 3010

MET 2400, MET 3303
MET 3403 (3)
Applied Machine Elements
None

MATH 1845 or 1910, and PHYS 2020 or 2120
MET 3200 (3)
Electricity
PHYS 2020

Senior

ECON 2010, ECON 2020, ACCT 2120/ACCT 3720
FIN 3210 (3)
None

ECON 2010
MKT 3400 (3)
None

MET 3200
MET 3270 (3)
None

MET 2065
MET 3060 (3)
None

Junior Standing
MET 3150 (2)
Maint Tech
None

None
LAW 2810 (3)
None

MET 3270
MET 4250 (3)
None

Select two:
MET 4000 (3)
MET 4210 (3)
MET 4220 (3)
MET 4990 (3)

MET 3403
MET 4620 (3)
Senior Projects

Concentration: Management

Unofficial

2022-2023 TTU MET Dept: BSET Flowchart

See TTU Undergraduate Catalog for official curriculum statement.

Freshman

None
ENGL 1010 (3)
Writing 1
None

ENGR 1020 (1)
Connections to Engr.
None

ENGR 1110 (2)
Engr. Graphics
None

None
MET 1115 (3)
Intro to MET
None

None
MATH 1730 (5)
Pre- Calculus 1
None

None
CHEM 1110 (4)
or
CHEM 1010 (4)
None

ENGL 1010
(C or better)
ENGL 1020 (3)
Writing 2
None

HUFA 1 (3)

HUFA 2 (3)

None
MET 2000 (2)
Occupational Safety
None

None
HISTORY 2010 (3)
None

MATH 1730 (C or better)
MATH 1845 (3)
Technical Calculus
None

Sophomore

ENGL 1020 (C or better)
LITERATURE (3)
None

None
PSY 1030 (3)
Intro to Psy
None

Math 1730
ENGR 1120 (2)
Programming for Engineers

None
ECON 2020 (3)
None

Math 1730, ENGR 1110, MET 1100
MET 2065 (2)
Metal Manuf
None

MATH 1730, PHYS 2010
MET 2400 (3)
Statics & Strength of Material
None

None
ECON 2010 (3)
None

PHYS 2010 or PHYS 2110
PHYS 2020 (4)
Or 2120
None

None
PHYS 2010 (4)
Or 2110
None

None
HISTORY 2020 (3)
None

Legend for Flowchart:

Prerequisites
Course Number
Course Title
Co-requisites

Junior

MET 1100, CHEM 1010 or CHEM 1110
MET 3100 (3) Or ME 3010
None

Junior Standing
ACCT 3720 (3)
Survey of Accounting
None

Sophomore Standing
BMGT 3510 (3)
Management
None

ENGR 1110
MET 3303 (3)
CAD for Technology
None

MET 2000, MET 2065, MET 2615
MET 3713 (3)
Methods Design
None

ENGL 1020
PC 2500 (3) OR COMM 2025
None

MATH 1710 (C or better)
MATH 3070 (3)
Statistical Methods
None

ENGR 1110, MET 1100, MET 3100 or ME 3010
MET 3003 (3)
Metal Casting
MET 3100 or ME 3010

MET 2400, MET 3303
MET 3403 (3)
Applied Machine Elements
None

MATH 1845 or 1910, & PHYS 2020 or 2120
MET 3200 (3)
Electricity
PHYS 2020

Senior

ECON 2010, ECON 2020, ACCT 2120/ACCT 3720
FIN 3210 (3)
None

ECON 2010
MKT 3400 (3)
None

MET 2615 & MET 2065
MET 3703 (3)
None

Senior Standing
MET 4600 (3)
None

Junior Standing
MET 3150 (2)
Maint Tech
None

None
LAW 2810 (3)
None

Senior Standing
MET 4650 (3)
None

Select one:
MET 4550 (3)
MET4990 (3)

Select one:
MET 4310 (3)
MET 4990 (3)

MET 3403
MET 4620 (3)
Senior Projects