Institutional Effectiveness Report
2019-20

Program: Engineering BS

College and Department: College of Engineering – Basic Engineering

Contact: Chris Wilson

Mission: The General & Basic Engineering (GBE) Department will provide a high quality educational experience for the students under its care through a flexible balance of academic, professional, and extracurricular programs. Additionally, the department will develop and maintain partnerships and service opportunities for its students, faculty, staff with the region and general public as a whole. Finally, the department will contribute to society through its engineering scholarship.

Program Goal:

In the first few years following graduation, the graduates of the BSE program will:

PG 1: Serve engineering needs in East Tennessee, Middle Tennessee, and broader markets, especially in companies which may have very few degreed engineers.

PG 2: Collaborate with non-engineers or discipline-specific engineers or both because of the general engineering background.

PG 3: Grow—Demonstrate career and professional growth as an engineer.

Student Learning Outcome:

The student outcomes are as follows:

SO 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;

SO 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;

SO 3: an ability to communicate effectively with a range of audiences;

SO 4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, considering the impact of engineering solutions in global, economic, environmental, and societal contexts;

SO 5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;

SO 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;

SO 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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

Alignment of PEOs and SOs

	SO1	SO2	SO3	SO4	SO5	SO6	SO7
SO Topic	Complex problems	Engr design	Comm	Ethics and judgment	Team and project mngt	Exp and data analysis	New knowledge
PEO1: Serve	x	x	x	x		x	x
PEO2: Collaborate	x	x	x	x	x	x	x
PEO3: Grow	x		x	x	x		x

Assessment Methods:

1. *ENGR 4510 – Assignment (SO7):*
2. *ENGR 4950 – Project Report (SO1, 2, 4, 5, 7):*
3. *ENGR 4960 – Project Report (SO1, 2, 3, 5, 6, 7):*
4. *ME 2023 – Lab Report (SO1, 6):*
5. *Senior Exit Survey (SO1, 2, 3, 4, 5, 6, 7):*

The target is that 80% or more of the students meet or exceed expectations for each performance indicator. Any performance indicator in which more than 20% of students do not meet expectation will trigger a review, which may result in an action for program improvement.

Modifications for Improvement:

Only two students have progressed far enough into the program for assessment data to be collected. The data from those two students will be combined with the results of students in 2020-21 to provide more valid and reliable assessment results.

SO 4

During spring 2020 assessment period no assessment data for SO4 was collected due to lack of appropriate pedagogy/content. To remedy the lack of assessment data, faculty of ENGR 4900, ENGR 4950 and ENGR 4960 met and developed content and assessment instruments to be implemented during 2020-21 academic period.

Appendices

1. Curriculum Map

Appendix 1: Curriculum Map

BSE Assessment Plan – Course Mapping

Student Outcome		SO1	SO2	SO3	SO4	SO5	SO6	SO7
Tenn. Tech Required Course (2020-21 Catalog)	**ETSU Required Course (2020-21 Catalog)**	**Complex Problems**	**Engineering Design**	**Communication**	**Ethics and Professionalism**	**Teamwork and Project Management**	**Experimentation and Data Analysis**	**New Knowledge and Learning Strategies**
CEE 2110 Statics	CEE 2110 Statics	I						
ME 2330 Dynamics	ME 2330 Dynamics							I
CEE 3110 Mechanics of Materials	CEE 3110 Mechanics of Materials							I
COMM 2025 Fund. of Communication	COMM 2025 Fund. of Public Speaking			I				
ECE 2850 Principles of Electric Circuits	ECE 2010 Electric Circuits I	I						
ECE 2851 Prin. of Electric Circuits Lab	ECE 2011 Electrical Engineering Lab			I			I	
ECE 3850 Int. Prin. of Electric Circuits	ECE 2020 Electric Circuits II	I						
ENGR 1110 Engineering Graphics	ENGR 1110 Engineering Graphics			I		I		I
ENGR 1120 Programming for Engineers	ENGR 1120 Programming for Engineers							I
ENGR 3020 Numerical Methods	CSC 3020 Numerical Methods	R						
ENGR 3120 Solid Modeling	ENGR 3120 Solid Modeling		I, R			R		
ENGR 3710 Prin. Of Engr. Economy	CEE 3710 Prin. Of Engineering Econ.		I		I			
ENGR 3720 Engineering Statistics	CEE 3720 Engineering Statistics				I		I, R	
ME 3010 Materials & Processes in Mfg.	ME 3010 Materials & Processes in Mfg.				R			I
ME 3023 Measurements in Mech. Sys.	ME 3023 Measurements in Mech. Sys.	**D**		R			**D**	
ENGR 4510 Engineering Management	ENGR 4510 Engineering Management			R		I,R		**D**
ENGR 4900 Engr. Design, Prof., & Ethics	ENGR 4900 Professionalism & Ethics	R	R	**D**	**D**	R		R
ENGR 4950 Senior Design I	ENGR 4950 Senior Design I	**D**	**D**	R	**D**	**D**	R	**D**
ENGR 4960 Senior Design II	ENGR 4960 Senior Design II	**D**	**D**	**D**		**D**	**D**	**D**

Legend: I: Introduce; R: Reinforce; D: Demonstrate