Electrical Engineering (EE) B.S.

A Bachelor of Science degree program in Electrical Engineering prepares individuals to apply scientific and mathematical principles to the planning, design, and evaluation of electrical and electronic systems and their components. This degree includes instruction in circuits, electronics, digital systems, electrical networks, electromagnetism, embedded control, programming, signal analysis, and electrical systems.

In accordance with the standards set forth by the Engineering Accreditation Commission (EAC) of ABET, graduates from an Electrical Engineering program will have:

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

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

3. an ability to communicate effectively with a range of audiences

4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

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

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

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

Input from electrical engineering faculty, industry, and research were utilized in the development of the Electrical Engineering curriculum. As a means of validation, the A&M-Commerce degree was benchmarked against curricula from the ABET Electrical Engineering accredited schools, as well as the ABET Electrical Engineering curriculum requirements, and the Fundamentals of Engineering (FE) examination.

Core Curriculum Courses		**42**
See the Core Curriculum Requirements (https://coursecatalog.tamuc.edu/undergrad/core-curriculum-requirements/)		
Required courses in the major		
ENGR 110	Introduction to Engineering and Technology	3
ENGR 113	Product Design and Development	3
ENGR 2304	Computing for Engineers	3
ENGR 2308	Engineering Economic Analysis	3
ENGR 213	Engineering Probability and Statistics	3
EE 210	Digital Circuits	3
EE 220	Circuit Theory I	3
EE 309	Circuit Theory II	3
EE 310	Digital Systems /Embedded Control	3
EE 320	Electronics I	3
EE 321	Electronics II	3
EE 330	Continuous Signals and Systems	3
EE 340	Electromagnetics	3
EE 433	Digital Signal Processing	3
EE 435	Control Systems	3
EE 440	Electric Machinery	3
EE 470	Senior Capstone Design Project I	3
EE 471	Senior Capstone Design Project II	3
Required support courses		
CHEM 1311	General and Quantitative Chemistry I (3 sch) *	
CHEM 1111	General and Quantitative Chemistry Laboratory I (1 sch) *	
MATH 2413	Calculus I (4 sch) *	
MATH 2414	Calculus II	4
MATH 2415	Calculus III	4
MATH 2320	Differential Equations	3

MATH 2318	Linear Algebra	3
ECO 2301	Prin Macro Economics (3 sch) *	
or ECO 2302	Principles of Micro Economics	
PHYS 2425	University Physics I (4 sch) *	
PHYS 2426	University Physics II (4 sch)	4
COSC 1436	Introduction to Computer Science and Programming	4
Technical Electives EE or PHYS **		9
EE 430	Discrete Signals & Systems (Elective)	
EE 450	Advanced Digital Signal Processing	
EE 451	Digital Systems Design	
EE 452	Antenna Theory and Design	
EE 453	RF Networks	
EE 454	Power Electronics	
EE 455	Digital Design with HDL	
EE 489	Independent Study	
EE 497	Special Topics	
PHYS 319	Computational Physics with Python	
PHYS 321	Modern Physics	
PHYS 333	Wave Motion, Acoustics, and Optics	
PHYS 411	Classical Mechanics	
PHYS 414	Thermodynamics and Kinetic Theory	
PHYS 420	Quantum Mechanics	
PHYS 430	Optics	
PHYS 437	Nuclear Physics	
PHYS 492	Instrumentation and Control	
Total Hours		**127**

* *These courses should be used to satisfy the Core Curriculum Requirements in Social and Behavioral Science, Natural Sciences, and Mathematics, respectively; otherwise, the credit hours required to earn the B.S. in EE will exceed 127.

** A minimum of three (3) courses, nine (9) credits must be selected and completed from the elective list.

A grade of “C” or higher must be earned in all courses in this Major.

First Year

Fall	Hours	Spring	Hours
ENG 1301*	3	ENG 1302*	3
Component Area Option*	3	PHYS 2425*	4
CHEM 1311*	3	COSC 1436	4
CHEM 1111*	1	MATH 2414	4
MATH 2413*	4	ENGR 113	3
ENGR 110	3		
	17		**18**

Second Year

Fall	Hours	Spring	Hours
HIST 1301*	3	HIST 1302*	3
PHYS 2426	4	Creative Arts*	3
MATH 2320	3	MATH 2318	3
EE 210	3	EE 220	3
ENGR 2304	3	ENGR 213	3
		ENGR 2308	3
	16		**18**

Third Year

Fall	Hours	Spring	Hours
PSCI 2305*	3	PSCI 2306*	3
Language, Philosophy, & Culture*	3	EE 310	3
MATH 2415	4	EE 321	3
EE 309	3	EE 330	3

EE 320	3	EE 340	3
	16		**15**

Fourth Year

Fall	Hours	Spring	Hours
ECO 2302*	3	Technical Electives EE or PHYS	3
EE 440	3	EE 433	3
EE 470	3	EE 435	3
Technical Electives EE or PHYS	3	EE 471	3
Technical Electives EE or PHYS	3		
	15		**12**

Total Hours: 127

* Able to be satisfied by the Core Curriculum Requirements