ENGINEERING SCIENCES, 15.0000.00	
STANDARD 1.0 – DEVELOP AN UNDERSTANDING OF ENGINEERING PROBLEM SOLVING AND DESIGN PRACTICES	
1.1	Identify the steps of the scientific process
1.2	Differentiate between the use of the scientific method by scientists to validate theories and by engineers to solve problems
1.3	Define the role of iteration in engineering practices
1.4	Define the role of alternative design in engineering practices
1.5	Explain how engineering includes the application of many fields of study to the problem-solving process
STANDARD 2.0 – APPLY CONCEPTS OF ENGINEERING PROBLEM SOLVING AND DESIGN PRACTICES	
2.1	Apply a structured approach to solving problems including: defining a problem (including customer needs), brainstorming, researching and generating ideas, identifying criteria and constraints, exploring possibilities, making a model (physical, mathematical, conceptual), evaluating the solution using standards and specifications (i.e., testing), and communicating results
2.2	Define test driven design and implementation
2.3	Troubleshoot as a way of finding out why something does not perform to standards
2.4	Break down systems into their component parts and analyze their relationships and interdependencies
2.5	Examine the relationships between design criteria and such constraints as cost, time, quality, manufacturability, testability, maintainability, human factors, and environmental factors
2.6	Develop and implement a plan for a project (i.e., time, materials, resources, and steps)
STANDARD 3.0 – APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY	
3.1	Use the relationships among energy, work, and power to solve a variety of problems involving mechanical, fluid, electrical, and thermal systems
3.2	Use Newton's Laws of motion to analyze static and dynamic systems with and without the presence of external forces
3.3	Use the laws of conservation of energy, charge, and momentum to solve a variety of problems involving mechanical, fluid, chemical (atomic), nuclear, biological, electrical, and thermal systems
3.4	Identify relevant chemical, environmental, mechanical (tension, compression, torque), electrical, and physical properties of materials used in engineering projects
3.5	Describe the relations between amplitude, wavelength, frequency, period, and speed of a wave for mechanical and electromagnetic oscillations
STANDARD 4.0 – APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY	
4.1	Apply appropriate data collection and analysis methods to display data (graphs, tables, formulas, and words)
4.2	Apply concepts of statistics to help make decisions
4.3	Use algebraic, geometric, and trigonometric relationships, characteristics, and properties to solve engineering problems

4.4	Evaluate mathematical solutions for reasonableness
4.5	Apply mathematical concepts to modeling
STANDARD 5.0 – USE SYSTEMS OF MEASUREMENT	
5.1	Convert units from one system of measurement to another
5.2	Apply precision, accuracy, and tolerance in measurement systems
STANDARD 6.0 – APPLY ENGINEERING TECHNOLOGY AND TOOLS	
6.1	Use software tools to solve problems, model, and display data
6.2	Use appropriate devices such as calipers, oscilloscopes, and digital multimeters
6.3	Interpret graphical data such as plans, diagrams, and working drawings
6.4	Recognize safe use of tools, machines, equipment, and materials
STANDARD 7.0 – IDENTIFY DIFFERENT DISCIPLINES WITHIN THE FIELD OF ENGINEERING	
7.1	Identify the responsibilities of the various engineering disciplines such as mechanical, software, architectural, civil/structural, electrical, chemical, and mining
7.2	Compare and contrast the responsibilities of various engineering discipline such as mechanical, software, architectural, civil/structural, electrical, chemical, and mining
7.3	Identify the skills and education needed to enter a particular field of engineering
STANDARD 8.0 – RECOGNIZE THAT ENGINEERING IS A HUMAN ENDEAVOR INTENDED TO ADDRESS THE NEEDS OF A GLOBAL SOCIETY	
8.1	Recognize the societal, legal, and ethical responsibilities of engineering
8.2	Recognize the impact of engineering from multiple perspectives, such as, economic, environmental, political, sustainable, and health and safety