# Scope & Sequence

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| Course Name: Energy and Natural Resource Technology **TSDS PEIMS Code:** 13001100 | | | **Course Credit:** 1.0  **Course Requirements:** Recommended for Grades 10-12.  **Prerequisites:** None.  **Recommended Prerequisites:** Minimum one credit from the courses in Agriculture, Food, and Natural Resources Career Cluster. |
| **Course Description:** Energy and Natural Resource Technology examines the interrelatedness of environmental issues and production agriculture. Students will evaluate the environmental benefits provided by sustainable resources and green technologies. Instruction is designed to allow for the application of science and technology to measure environmental impacts resulting from production agriculture through field and laboratory experiences. | | | |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. | | | |
| **Total Number of Periods**  **Total Number of Minutes**  **Total Number of Hours** | 175 Periods  7,875 Minutes  131.25 Hours\* | \*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. | |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***  (assumes 45-minute periods)  Total minutes per unit | **TEKS Covered**  **130.11. (c) Knowledge and skills** | |
| **Unit 1: Professional Standards/Employability Skills**  Students will discuss the professional standards and employability skills, including identifying career development and entrepreneurship opportunities in the field of energy and natural resources, applying competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources. Students will further develop and demonstrate these skills and attributes throughout the course. In small groups and/or in other classroom activities, students will demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace. Students will analyze employers' expectations such as appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills. | 10 periods  450 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) identify career development, education, and entrepreneurship opportunities in the field of energy and natural resources;  (B) apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;  (C) demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace; and  (D) analyze employers' expectations such as appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills. | |
| **Unit 2: Natural Resources**  Students will discuss the importance and scope of natural resources. In small groups and/or in other classroom activities, students will identify various types of natural resources, discuss renewable and non-renewable energy resources and their impact on the environment, analyze the impacts of natural resources and their effects on the agricultural economy, and map the geographic and demographic uses of natural resources. | 20 periods  900 minutes | (4) The student discusses the importance and scope of natural resources. The student is expected to:  (A) identify various types of natural resources;  (B) discuss renewable and non-renewable energy resources and their impact on the environment;  (C) analyze the impacts of natural resources and their effects on the agricultural economy; and  (D) map the geographic and demographic uses of natural resources. | |
| **Unit 3: Water Use and Management**  Students will discuss water use and management in agricultural settings. In small groups and/or in other classroom activities, students will identify the distribution and properties of water in the hydrologic cycle, identify agricultural uses of water such as recycling, discuss how agricultural uses may impact water resources, define point source and non-point source pollution, identify sources of point source and non-point source pollution associated with agriculture, evaluate how the different agricultural water uses may impact water availability, and research water use legislation. | 35 periods  1,575 minutes | (5) The student identifies water use and management in agricultural settings. The student is expected to:  (A) identify the distribution and properties of water in the hydrologic cycle;  (B) identify agricultural uses of water such as recycling;  (C) discuss how agricultural uses may impact water resources;  (D) define point source and non-point source pollution;  (E) identify sources of point source and non-point source pollution associated with agriculture;  (F) evaluate how the different agricultural water uses may impact water availability; and  (G) research water use legislation. | |
| **Unit 4: Air Quality**  Students will discuss air quality associated with agricultural production. In small groups and/or in other classroom activities, students will describe the components of the atmosphere and the atmospheric cycle, define air pollution, analyze air quality legislation, identify sources and effects of air pollution from agricultural production, discuss different emission management strategies, and identify common air pollution controls used in agricultural production. | 30 periods  1,350 minutes | (6) The student describes air quality associated with agricultural production. The student is expected to:  (A) describe the components of the atmosphere and the atmospheric cycle;  (B) define air pollution;  (C) analyze air quality legislation;  (D) identify sources and effects of air pollution from agricultural production;  (E) discuss different emission management strategies; and  (F) identify common air pollution controls used in agricultural production. | |
| **Unit 5. Soil Erosion**  Students will discuss soil erosion as related to agricultural production. In small groups and/or in other classroom activities, students will identify agricultural production practices that can contribute to soil erosion, analyze effects of soil erosion, discuss the legal aspects of soil erosion, and identify soil erosion control methods and programs. | 25 periods  1,125 minutes | 7) The student examines soil erosion as related to agricultural production. The student is expected to:  (A) identify agricultural production practices that can contribute to soil erosion;  (B) analyze effects of soil erosion;  (C) discuss the legal aspects of soil erosion; and  (D) identify soil erosion control methods and programs. | |
| **Unit 6: Effects of Natural Resource Use**  Students will discuss the effects of natural resource use. In small groups and/or in other classroom activities, students will identify the progression of use of natural resources leading to environmental degradation, explain the impact of human population dynamics on the environment, discuss the abuse of natural resources, and communicate the environmental consequences of natural resource use such as the impact on living organisms. | 25 periods  1,125 minutes | (8) The student explains the effects of natural resource use. The student is expected to:  (A) identify the progression of use of natural resources leading to environmental degradation;  (B) explain the impact of human population dynamics on the environment;  (C) discuss the abuse of natural resources; and  (D) communicate the environmental consequences of natural resource use such as the impact on living organisms. | |
| **Unit 7: Supervised Agriculture Experience Program**  Students will discuss and develop all components of a supervised agriculture experience. Through a variety of classroom activities, students will utilize appropriate technology to plan, propose, conduct, document and evaluate their supervised agriculture experience program, apply appropriate record-keeping skills, and participate in leadership opportunities, Students will use instructional time to conduct field and laboratory investigations using safe, environmentally appropriate, and ethical practices in a supervised agriculture experience. Students will apply accepted procedures for the use and conservation of resources and for the safe handling of materials. As a culminating activity for this unit, students will produce and participate in a local program of activities using a strategic planning process. | 30 periods  1,350 minutes | (2) The student develops a supervised agriculture experience program. The student is expected to:  (A) plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity;  (B) apply proper record-keeping skills as they relate to the supervised agriculture experience;  (C) participate in youth leadership opportunities to create a well-rounded experience program; and  (D) produce and participate in a local program of activities using a strategic planning process.  (3) The student uses instructional time to conduct field and laboratory investigations using safe, environmentally appropriate, and ethical practices in a supervised agriculture experience. The student is expected to:  (A) demonstrate safe practices during field and laboratory investigations in a supervised agriculture experience; and  (B) use accepted procedures for the use and conservation of resources and for the safe handling of materials. | |