# Scope & Sequence

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| Course Name: Range Ecology and Management **TSDS PEIMS Code:** 13001600 | | | **Course Credit:** 1  **Course Requirements:** grades 10-12.  **Prerequisites:** None. |
| **Course Description:** Range Ecology and Management is designed to develop students' understanding of rangeland ecosystems and sustainable forage production. | | | |
| **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. 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 unite | **TEKS Covered**  **130.19 Knowledge and skills** | |
| **Unit 1: Career Exploration in the Environmental/Natural Resources Industry**  Students will learn about careers in various areas in the environmental and natural resources industry, the personal skills needed to obtain one of these jobs and how skills needed for success have changed over time. Students will understand the importance of time management, the importance of effective communication and appropriate interaction in the workplace as well as understand the importance of a first impression. This unit will culminate in an experiential activity designed to allow the students to create a resume and cover letter  with a job description and to participate in a mock job interview with a panel of possible employees. | 5 periods  225 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 environmental and natural resources;  (B) apply competencies related to resources, information, interpersonal skills, and systems of operation in environmental and natural resources;  (C) demonstrate knowledge of personal and occupational safety, health, environmental regulations, and first-aid policy in the workplace; and  (D) analyze employers' expectations, including appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills. | |
| **Unit 2: Supervised Agricultural Experience (SAE)**    This unit, students will be able to define and describe Supervised Agricultural Experience (SAE) programs. Students will be able to explain how SAE’s are a vital part of the Agriculture Education Program by participating in local CTSO activities such as FFA as well as engage in a required SAE project. Students will be able to identify key partners in developing a successful SAE. Through involvement in an SAE, students will learn expected workplace behavior, develop specific skills within the industry, and will be given the opportunity to apply academic and occupational skills in the workplace. | 10 periods  450 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. | |
| **Unit 3: What are Rangelands?**    This unit exposes the students to the diversity of rangeland ecosystems such as shrub lands, grasslands, deserts and savannas to name a few. Students will learn about climax vegetation and understand about the capabilities and limitations of rangelands. Students will be able to diagram energy flow through an ecosystem. As a culminating activity, students will select a specific type of rangeland and discuss its characteristics such as: soil type, topography, vegetation and water quality. | 20 periods  900 minutes | (3) The student develops an understanding of the rangeland ecosystem. The student is expected to:  (A) describe ecology, photosynthesis, energy flow, and climax vegetation;  (B) describe the impact of rangeland on the water cycle and water quality; and  (C) determine capabilities and limitations of rangelands. | |
| **Unit 4: Rangelands as Renewable Natural Resources with many Products and Uses**  This unit allows for students to understand and recognize the importance of successful rangeland ecological practices. Students will be able to explain methods of classifying plants and animals in a particular rangeland as well as identify native, non-native and invasive species of plants and animals. Students will also be able to discuss demands placed on rangeland by a growing population and describe the role of carrying capacity in maintaining and improving rangeland. As a culminating activity, students will research invasive plant species in a rangeland ecosystem and report their findings to the class. | 30 periods  1,350 minutes | (4) The student develops an understanding of rangeland as a dynamic, living, and changeable system. The student is expected to:  (A) explain the relationship of rangeland to the environment;  (B) discuss the interrelationships among water, alternative use, carrying capacity, and population;  (C) identify and classify native, non-native, and invasive plants and animals in the rangeland ecosystem;  (D) explore the use of rangeland plants as alternative energy sources;  (E) develop an understanding of the role of rangeland in water recharge and conservation; and  (F) recognize the importance of successful rangeland ecology practices. | |
| **Unit 5: Abiotic and Biotic Factors of a Rangeland**  Students will further explore the flow of energy and cycling of materials in a rangeland ecosystem by learning more about the abiotic and biotic components of a rangeland. Special emphasis will be placed on soil types and topography of the rangeland. Students will classify range sites by soil properties. This unit culminates in an activity designed to allow students to demonstrate all they have learned about abiotic and biotic components of a rangeland. | 25 periods  1,125 minutes | (5) The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:  (A) discuss components of rangeland with an emphasis on soil;  (B) determine components of rangeland with an emphasis on topography; and  (C) classify range sites by soil properties; | |
| **Unit 6: Range Condition**  This unit introduces students to understanding and evaluating rangeland vegetation to ensure sustainable land use. The students will compare and contrast rangeland condition trends as well as formulate methods to improve range conditions. This unit culminates in an activity designed to allow students to demonstrate all they have learned about how to measure range condition and methods to improve range condition. | 25 periods  1,125 minutes | (6) The student develops an understanding of the dynamic process of a renewable rangeland resource. The student is expected to:  (A) determine range condition based on plant populations;  (B) compare and contrast rangeland condition trends; and  (C) formulate methods to improve range conditions. | |
| **Unit 7: Livestock Management on Rangeland**  This unit, the students will examine the nutritional needs of livestock as a means of practicing livestock management on rangeland. The students will learn which plants are beneficial and harmful to livestock as well as understand the importance of effectively managing the grazing areas. This unit culminates in an activity designed to allow students to demonstrate all they have learned about maintaining and improving rangeland for livestock management. | 20 periods  900 minutes | (7) The student identifies methods of maintaining and improving rangeland for livestock management. The student is expected to:  (A) identify plants beneficial to livestock;  (B) identify plant species harmful to livestock;  (C) analyze how livestock use range plants; and  (D) discuss livestock grazing management. | |
| **Unit 8: Wildlife Management on Rangeland**  This unit exposes students to managing rangeland for wildlife. The students will learn about food and water needs of various wildlife species. Students will also learn about various wildlife habitats and the cover needed. This unit culminates in an activity designed to allow students to demonstrate all they have learned about improving rangeland for wildlife management. | 20 periods  900 minutes | (8) The student identifies methods of maintaining and improving rangeland for wildlife management. The student is expected to:  (A) identify plants beneficial to wildlife;  (B) identify plants species harmful to wildlife;  (C) analyze how wildlife species use range plants; and  (D) discuss wildlife grazing management. | |
| **Unit 9: Rangelands and Global Concerns**  Students will understand that over one-third of the land area in the United States is rangeland and it is important for it to be managed effectively. Students will learn how population, water supply and demands, land use and other characteristics have played a huge part in the environment and rangeland management. Students will learn the importance of the need to maintain a balance to the rangeland ecosystems and explore opportunities for rangeland improvement. As a culminating activity, students will select a topic as it relates to global concerns and rangeland management. The students will research the topic and present their findings to the class. | 20 periods  900 minutes | (9) The student develops an understanding of rangeland management as it relates to global concerns. The student is expected to:  (A) examine how rangeland characteristics affect aquifers;  (B) analyze how rangeland characteristics affect the environment;  (C) analyze how rangeland management affects the environment; and  (D) evaluate the impact of energy production systems on rangelands. | |