# Scope & Sequence

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| Course Name: Livestock Production **TSDS PEIMS Code:** 13000300 | **Course Credit:** 1.0**Course Requirements:** This course is recommended for students in grades 10 – 12. **Prerequisites:** None. |
| **Course Description:** In Livestock Production, students will acquire knowledge and skills related to livestock and the livestock production industry. Livestock Production may address topics related to beef cattle, dairy cattle, swine, sheep, goats, and poultry. |
| **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 Periods7,875 Minutes131.25 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****130.7 (c) Knowledge and skills** |
| **Unit 1: Supervised Agricultural Experience Program (SAEP) in Livestock Production**Students will continually work on a SAEP throughout this course. The program is aimed to help prepare additional opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a real-world setting. Students will plan, propose, conduct, document and evaluate a SAEP pertaining to either entrepreneurship, placement, exploration, research (either experimental or analytical), improvement, supplemental or other identified topic as an experiential learning activity. | 20 Periods900 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 |
| **Unit 2: Community Service and Leadership Development**During this unit, students will learn more about the qualities and characteristics required to be successful in business and industry. While a basic understanding and development of employability skills will help students obtain employment, they will learn that developing leadership skills will aid them in job retention and potential promotion opportunities. As a part of their Supervised Agriculture Experience Program (SAEP) students will participate in youth leadership opportunities, such as FFA, and implement/participate in local activities in their community. | 15 Periods675 Minutes | 2. The student develops a supervised agriculture experience program. The student is expected to:(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: Anatomy and Physiology of Livestock**Students will learn the anatomy and physiological systems/functions related to livestock. Students will identify and describe the musculoskeletal, cardiovascular, digestive, circulatory, and reproductive systems of livestock including ruminant, non-ruminant, and poultry species. | 15 Periods675 Minutes | 5. The student explains anatomy and physiology related to nutrition, reproduction, health, and management of livestock species. The student is expected to:(A) explain the skeletal, muscular, respiratory, reproductive, and circulatory systems of animals 6. The student determines nutritional requirements of ruminant and non-ruminant animals, including poultry. The student is expected to:(A) describe the digestive systems of ruminant and non-ruminant animals |
| **Unit 4:** **Livestock Nutrition**This unit contains lessons about nutrient flow, balanced rations, digestive processes and the influence of physiology on animal nutrition.Students will understand the importance of a balanced diet and be able to balance a ration using Pearson’s Square procedure. Students will be able to discuss livestock feeding and differentiate between the nutritional requirements of various livestock species; all animals feed must contain dry matter, various groups of nutrients, minerals and trace-elements and should not be moldy or mixed with dirt and soil nor contain poisonous [ingredient](http://www.infonet-biovision.org/taxonomy/term/406)s. | 15 Periods675 Minutes | 6. The student determines nutritional requirements of ruminant and non-ruminant animals, including poultry. The student is expected to:(B) identify sources of nutrients and classes of feed;(C) identify vitamins, minerals, and feed additives;(D) formulate rations; and(E) discuss feeding practices and feed quality issues9. The student knows the factors impacting commodity prices and costs. The student is expected to: (B) formulate rations based on least-cost factors |
| **Unit 5: Genetics and Reproduction of Livestock**Students will learn about genes and how they affect important traits such as growth, reproduction, disease resistance, and behavior. This unit contains lessons on reproductive topics such as conception, gestation and fetal development, and partruition. Students will conduct experiments pertaining to principles of genetics theories including labs to support Mendelian inheritance.  | 15 Periods675 Minutes | 3. The student demonstrates technical skills relating to the interrelated human, scientific, and technological dimensions of animal systems. The student is expected to:(B) apply the principles of livestock breeding and nutrition to predict the impact of current advances in genetics7. The student explains animal genetics and reproduction. The student is expected to:(A) describe the reproductive systems of various livestock;(B) explain the use of genetics in animal agriculture such as Expected Progeny Differences (EPDs), phenotype, and genotype;(C) identify systems of animal breeding; (E) design and conduct experiments to support known principles of genetics |
| **Unit 6: Genetic Engineering in Livestock**During this unit students will learn about animal evaluation, animal performance data, measuring desirable traits, predicting phenotype and genotype, and the role of mutations and hybrids in animal genetics. Students will research current and emerging technologies used in animal reproduction including cloning, in-vitro fertilization, artificial insemination and embryo transfer, and production breeding.  | 15 Periods675 Minutes | 7. The student explains animal genetics and reproduction. The student is expected to:(B) explain the use of genetics in animal agriculture such as Expected Progeny Differences (EPDs), phenotype, and genotype;(D) research current and emerging technologies in animal reproduction such as cloning, embryo transfer, in vitro fertilization, and artificial insemination |
| **Unit 7: Livestock Pests and Disease**Students will participate in lessons on recognizing health vs. illness; disease causing pathogens, vectors, and hosts; prevention, control, and treatment practices; parasites; quality assurances in medications and animal handling; disease spread and prevention; and how animal disease impacts consumers and economics. Students will research methods of disease control, treatment, and prevention for livestock animals and the governmental agencies, private entities and aid agencies that are critically concerned with understanding the cost-effectiveness of alternative strategies and investment options to tackle livestock pests and diseases. | 15 Periods675 Minutes | 5. The student explains anatomy and physiology related to nutrition, reproduction, health, and management of livestock species. The student is expected to:(B) evaluate vital signs and normal behavior8. The student identifies animal pests and diseases. The student is expected to:(A) identify and describe the role of bacteria, fungi, viruses, genetics, and nutrition in disease;(B) identify methods of disease control, treatment, and prevention; and(C) classify internal and external parasites, including treatment and prevention |
| **Unit 8: Basic Care of Livestock**Students will understand that livestock need shelter, water, feed and, sometimes, manure/mud to survive to meet their basic needs but they often need other care to be viable. Students will describe and know when veterinary procedures are necessary including dehorning, castration, tail docking, teeth clipping, lancing, injections (vaccines and antibiotics), ruminant hoof care, etc. Students will demonstrate the use of tools and procedures for restraining different species of livestock and the risks involved when handling.  | 10 Periods450 Minutes | 4. The student performs technical skills related to livestock production. The student is expected to:(B) describe common veterinary procedures and skills;(C) practice proper animal restraint techniques |
| **Unit 9: Livestock Management**Students will understand that livestock managers are responsible for running the business of poultry farms, dairy farms, cattle ranches or other livestock-related agribusinesses. Students will learn the business concepts pertaining to livestock management including keeping accurate financial records, supervising workers, complying with governmental regulations and ensuring proper care and feeding of animals. Students will practice conducting research and gathering data to research and problem solving regarding the Agriculture industry.  | 20 Periods900 Minutes | 4. The student performs technical skills related to livestock production. The student is expected to:(A) gather performance data;(D) demonstrate identification techniques; and(E) demonstrate effective management strategies such as financial planning and managing governmental regulations10. The student plans for dynamic changes in business operation. The student is expected to:(A) design, conduct, and complete research to identify and solve livestock management problems; and(B) use charts, tables, or graphs to prepare written summaries of data such as nutrition, digestion, and reproduction data obtained in a laboratory activity and an individual scientific research project |
| **Unit 10: Livestock Industry and Commodity Markets**Students will understand that commodity markets can include physical trading and derivatives trading using [spot prices](https://en.wikipedia.org/wiki/Spot_price), [forwards](https://en.wikipedia.org/wiki/Forward_contract), [futures](https://en.wikipedia.org/wiki/Futures_contract), and [options](https://en.wikipedia.org/wiki/Option_%28finance%29) on futures. Students will examine the interrelationship between agricultural commodities include grains, fruits, vegetables, and fiber as well as livestock and meat pertaining to regulatory bodies in agricultural products. Students will examine the interrelation of the soil, the atmosphere, the plant, and the animal is a cycle in which the same materials are used over and over again hence why famers employ concepts such as forage identification, rotational grazing, and grass protein levels. | 15 Periods675 Minutes | 9. The student knows the factors impacting commodity prices and costs. The student is expected to:(A) evaluate the relationship between livestock commodity markets; and(B) formulate rations based on least-cost factors3. The student demonstrates technical skills relating to the interrelated human, scientific, and technological dimensions of animal systems. The student is expected to:(A) assess the importance of the United States' impact on world commodity markets;(C) examine the interrelationship of plants and animals in concepts such as forage identification, rotational grazing, and grass protein levels |
| **Unit 10: Career Development**Students will identify interests, abilities, aptitudes, values, and personality traits as they relate to career planning, to develop a keen understanding of the value and benefit of work, and to differentiate between jobs and careers. This unit will help students better understand the various career opportunities within the animal systems industry. Students will develop a career plan designed to achieve their career goals within this industry. | 10 Periods450 Minutes | 1. The student demonstrates professional standards/employability skills as required by business and industry The student is expected to:(A) identify career development and entrepreneurship opportunities in the field of animal systems;(F) research career topics using technology such as the Internet |
| **Unit 11: Professional Development**Students will demonstrate the importance of positive work ethics and soft skills in relation to educational and career success including, but not limited to, appearance, attendance, attitude, character, communication, cooperation, organizational skills, productivity, respect, honesty, motivation, creativity, leadership, critical thinking, risk-taking, flexibility, questioning, and problem-solving, and teamwork. Students will understand the professional ethics legal responsibilities pertaining to the animal systems industry. This unit will also expose students to the important compliance, safety standards, and regulations that are implemented within this industry.  | 10 Periods450 Minutes | 1. The student demonstrates professional standards/employability skills as required by business and industry The student is expected to: (B) apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;(C) demonstrate knowledge of personal and occupational safety and health practices in the workplace;(D) identify employers' expectations, including appropriate work habits, ethical conduct, and legal responsibilities;(E) demonstrate characteristics of good citizenship such as stewardship, advocacy, and community leadership |