

Chapter 1 : Spongelab | Animal Anatomy

Anatomy and physiology are two of the most commonly thought scientific discipline related to animal projects. 4-H members have three key times where they are making or being told decisions based largely on anatomy and physiology.

Anatomy and physiology Take a deeper look at the science involved in animal production by exploring anatomy and physiology. April 29, - Author: Julie Thelen, Michigan State University Extension Youth apply animal anatomy and physiology skills through animal evaluation. Anatomy, physiology, biochemistry, chemistry, ethology study of behavior , virology study of viruses , bacteriology study of bacteria , endocrinology study of hormones and many more scientific fields play a large role in animal production. These eight practices help guide youth through thinking about science while making the subject a little less intimidating. There are numerous MSU Extension news articles to help youth succeed in science and see it more in their everyday lives. This article series will look more closely into the science that is inherently part of every 4-H animal project, breaking it down into five major areas beginning with anatomy and physiology. Anatomy and physiology are two of the most commonly thought scientific discipline related to animal projects. When selecting an animal. Each 4-H animal project starts by acquiring the animal. Most youth have two options when it comes to selecting an animal: In both cases, there are specific selection criteria that often increase in complexity as a youth has more experience in the project area. In selecting an animal, youth practice the skill of analyzing the anatomy and physiology of an animal when selecting it. As youth continue to improve their skillset by looking at more than just their own projects, these skills can be applied through animal evaluation judging contests. When youth compete in 4-H animal evaluation , they are able to explore animal science by learning to evaluate animal projects such as beef cattle, sheep , swine , dairy and horses. Participants learn to select animals based on breed characteristics, production factors, structure and carcass desirability livestock only , as well as increase their public speaking skills by preparing and delivering a logical and coherent set of oral reasons to the contest judge. Through these activities, youth are critically evaluating structural components of the animal including the ease in which it moves as well as the placement of legs when standing still. Additionally, youth determine if the animal has the proper amount of fat appropriate for the species. Furthermore, youth evaluate the functionality of each animal from nose to tail. Through daily observation and animal evaluation, youth critically evaluate the anatomy and physiology of their animals. Many 4-H members choose to show or exhibit the animals they raise at events including the county fair. At competitive events, animal judges are hired to help youth better understand the value and functionality of the animal they are exhibiting. In market and breeding stock classes, animals are evaluated on structure, muscle shape, fat composition and functionality. With the evaluation, youth are able to continue learning from their experience and potentially improve their ability to critically evaluate the anatomy and physiology of future animal projects. Although these three methods are a common way youth apply their science skills outside of the classroom, there are Animal Science Anywhere lessons that specifically target growth within the discipline. Anatomy and physiology are key components of the following four lessons designed for 4-H youth:

Chapter 2 : Animal Science Anatomy and Physiology: Lab Manual - Kathleen Earl Colverson - Google Boo

Animal Anatomy And Physiology (Animal Husbandry I) Learn animal anatomy and physiology from our team of professional animal scientists. Study animal systems and physiology, potential health issues, and more.

Aims Explain the structure of animals, including bones, organs, cells and tissues. Explain the digestion of animals. Explain the circulatory system of animals. Explain the structure and function of the animal urinary system. Explain the nervous system of animals. Explain the respiratory system of animals. Explain the animal reproductive system. Explain the muscular system in animals. Explain the skeletal system of a typical mammal. Explain biological mechanisms underlying the growth and development of animals. Explain the endocrine system of animals. Explain differences between different types of animals, in terms of both structure and function.

Feedback on this course: I have never come across such a friendly, helpful staff and am so enjoying my course. I will definitely recommend A. S to anybody who wants to study" Tanya Sadler - United Arab Emirates "The course teaches you the different systems within animals in terms of structure and function, cell and tissue structure, and also the differences between different categories of animals. S Tutor - B. Science Wildlife , Master of Science Agriculture Learning is Your First Step to Better Animal Management

An understanding of animal anatomy and physiology is important for people working in a range of industries, especially those working with livestock, domestic pets and wildlife. This course focuses mainly on mammal species, however, some other more developed animals are also included; and it provides a very sound introduction to understanding both the structural anatomy and functional physiology of animals. Before you can properly understand how an animal grows, moves, processes food, gets ill, or anything else -you must first understand what it is the parts it is made of , and how it functions the way each of those parts operates. Structure anatomy deals with the different parts of the animal body, such as; cells, tissues, bone, and muscle. Function physiology covers the different systems that are at work in animal body, such as; digestive, loco motor, urinary, and reproductive systems. How Does an Animal Sustain and Grow itself? Consider how nutrients pass from the arteries into the cells and how the waste products pass from the cells into the veins. Both arteries and veins are spread throughout the body. Arteries take oxygenated blood away from the heart to the various parts of the body, and veins return the de-oxygenated blood back to the heart and lung. To begin with, they are large tubes about the width of a little finger. They have thick walls. As an artery spreads out, it divides into branches and get progressively smaller and narrower until finally they become very fine, thread-like tubes called capillaries. Capillaries have very thin walls and are the place where arterial system and the venous system connect up with each other. Between the capillaries and the cells to which the capillaries carry nutrients, there is a fluid called interstitial fluid. Interstitial means "intervening space". This fluid surrounds the cells and capillaries and acts as a connecting link. The nutrients carried by the arteries pass through the walls of the artery to the capillaries and then travel through the interstitial fluid before passing through the walls of the cells. Waste products pass in a similar way but in the opposite direction! They travel through the cell walls; into the interstitial fluid and through the venous capillary walls. Although this sounds a simple procedure, it is a complex operation that makes use of all the special properties of cells such as osmosis, hydrostatic pressure and the electro-chemical gradient.

Growth Growth is described as an increase in body weight. Development is described as a change in body proportions. Four processes are involved in producing the final form of an adult animal and these are: Differentiation or the transformation of mother cells to different cell types. For example mother cells change to form the specialised cells of the brain, kidneys, liver, intestines etc. This process is irreversible - once these specialised organs have been formed the cells cannot change back to mother cells. Morphogenesis or the organisation of cells into tissues, the building of tissues into organs and the development of organs into the whole body. Growth is the sum total of the biological and chemical processes that start when the ovum is fertilised and end when the body attains a size and conformation that is characteristic of the species. Development is the co-ordination of the diverse processes which end in an adult with a form or appearance that is characteristic of the species. Development goes on for longer in higher species than in the less sophisticated animals. Growth Curve Although growth

itself is a highly complex process, it is possible to draw up a graph for each type of animal showing the expected increase in body weight over time. Such a graph is called a growth curve. There are two phases of growth. Phase 1 is called the self-accelerating phase because it is during this time that growth is most rapid. Phase 2 is termed the self-inhibitory phase because the growth slows down and eventually stops altogether. The point of inflexion occurs in Phase 1 and is the time of fastest growth within this already quick growing phase. It highlights the spurt of growth that occurs during puberty. It is an important point as it is used to compare the physiological age in different species. This course starts you off with the basics of animal anatomy and physiology which are fundamental to all types of work in the care of animals. Doing a course such as this shows you are serious about animals and their care. It is aimed at: Those working with animals e. Those that want to gain access to further study.

Chapter 3 : Animal Science | Iowa State University Catalog

Animal Science is designed for post-secondary students in an introductory course in a department of animal science. The text is designed to prepare students majoring in animal science for more advanced and specialized courses.

Graduates of our program will be knowledgeable about sustainable animal production practices that also ensure animal health and well-being and stewardship of natural resources. To enable learners to pursue a wide array of career interests, the department offers learning experiences ranging from the basic to the applied sciences. The overarching goals of the degree program are to provide a comprehensive animal science education in: Faculty in our program strive to create an environment for students to develop effective communication skills, develop skills that enable students to gather and integrate information to solve problems, become self-learners, become leaders and team builders, and to become aware of domestic and global issues driving changes in the animal industries. Learner outcomes for these goals, for each of our courses, and other information defining the program can be found at our web site: Our program is designed to provide career skills appropriate to job market needs. Our faculty goals include providing superior academic advising to enable students to fulfill their objectives. The department offers the degrees bachelor of science in animal science and bachelor of science in dairy science. A double major in animal and dairy science is not permitted. However, combining either the animal science or dairy science majors with other curricula is permitted. A limit of 6 credits each in Intercollegiate Judging Animal Science , or any independent study course courses can be applied toward a degree. A limit of 4 credits of Undergraduate Teaching Experience Animal Science can be applied toward a degree. Within the animal science major, specialized options in animal products, companion animal management, equine management, livestock management, pre-professional studies, and pre-veterinary medicine are available. The department offers a minor in Animal Science and a minor in Meat Science. A program that combines bachelor of science and master of science in animal science is offered. In addition, a program that combines a bachelor of science and master of business administration is offered. The Department facilitates student participation in the Midwest Poultry Consortium and the Swine Science Online program to offer additional training in poultry and swine production, respectively. Curriculum in Animal Science Students majoring in animal science will complete the degree requirements listed below. If desired, a student may also choose a specialized option. A minimum of 15 credits of animal science coursework must be earned at Iowa State University. A minimum of 15 credits must be completed from the courses listed to meet the Ethics, International Perspectives, U. Diversity, and Humanities and Social Sciences requirements.

Chapter 4 : Playlist: Animal Anatomy - PurposeGames

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General introduction to nutrition, reproduction, breeding, management and description of marketing channels of animals and poultry. Equates live animal and carcass characteristics with market specifications. Factors of pre- and post-slaughter treatment are related to the shelf life of fresh and processed meats. Basics of animal nutrition and feeding. Identification and classification of common feedstuffs, including relative nutritional value for livestock and poultry. Applied aspects of feeding and nutrition of livestock and poultry. Genetics, reproduction, nutrition, animal health, forage management and marketing channels as related to beef cattle enterprises. Management principles associated with swine production. Primary emphasis on interactions of health, equipment, nutrition, reproduction and genetics during nursery, finishing, farrowing and breeding phases of production. Management of farrowing, finishing and farrow to finish operations. Emphasis on management kills, computer applications and economics. Companion animals are often considered family members. Biological explanations are stressed for understanding disease states and normal behaviors of companion animals. These explanations are discussed from the point of view of problem behaviors in the average home housing these animals. This course will help educate the students about companion animals so that both the animals and their human families will be happier and more productive members of society. Restricted to Freshmen and Sophomores. Freshman standing or Sophomore standing. Introduction to Equine Science is a course designed for Freshmen and Sophomores of any major. There are no pre-requisites for this course. We will discuss terminology, impact of horses on history and society, breeds, uses, management, genetics, reproduction, health, nutrition, behavior, and business aspects of the horse industry. Introduction to the principles and physiology of animal management, the contributions of animals and animal products to humanity, the application of science to animal production, and issues regarding animal production. Normal management and production techniques [including proper terminology] as well as social issues and current events related to livestock, equines, and companion mammals are discussed. Course is 3 credits. Class meets Monday, Wednesday, and Friday 8: Fall semesters are restricted to new incoming Animal Science Freshmen. Open to all students in Spring and Summer. Hands-on experience and demonstrations with livestock and horses; identification of common management equipment and knowledge of proper use; animal tracts, organs, skulls, feeds, breeds, and other animal-related items or topics. This lab course is restricted to the following majors: Transportation is provided to the off-campus labs, and students will be returned to campus prior to the end of the scheduled lab period. A laboratory course in the applied management of beef cattle, dairy cattle, swine and small ruminants with participatory assignments of common techniques utilized in livestock production. This course is designed to introduce students to mammalian physiology structure and function with emphasis on livestock species. Students will gain a basic understanding of body systems including circulatory, muscular, skeletal, digestive, and reproductive systems and functions of those systems with relevance to the whole animal and maintenance of homeostasis. Students will learn to identify major anatomical and cellular structures from domestic animal livestock specimens through examination of gross and microscopic anatomy. Issues and Implications 3. Applications of and policy issues associated with plant, animal, and environmental biotechnology used in the agricultural industry are examined from an interdisciplinary approach. To provide an introduction to the science of genetics as applied to agriculture. Emphasis is given to qualitative and quantitative genetics. By the end of this course, students should be able to apply genetic concepts to efficiently solve problems and make predictions necessary for "real-life" agricultural situations. Biological processes in reproduction and lactation with emphasis on domestic mammals such as cattle, sheep, goats, horses, swine, dogs, and cats. Environmental and genetic factors that affect these processes. Identification, evaluation and solutions of problems in these physiological areas. This online Principles of Animal Nutrition course is designed for non-Animal Science majors and off-campus students. Introduction to nutrition, digestion, and absorption in domestic mammals. Major nutrient classes and their

functions in the body, feed classification and chemical analysis, feed processing, and nutrient requirements. Students must be Juniors or Seniors. This course is designed to acquaint students with different methods for merchandising livestock and with strategies for adding value to products produced from livestock. Students will learn new ways to promote a farming operation. Required visits to Animal Educational Units outside of normal class time and student must provide own transportation. Two required mandatory Saturday events. The animal auction held on the 2nd Saturday of April and the Open House held either one or two Saturdays varies depending on the Spring Holiday prior to the animal auction. ANS students cannot take this course for credit.. Basic disciplines and concepts involved in swine production including: Introduction and basic overview of the immune system, swine disease transmission and pathobiology, standard biosecurity protocols, identification of disease in pigs, basic treatment administration, and disease prevention. Management principles associated with breeding and gestation in swine. Emphasis on reproductive anatomy and physiology of boars and sows, development of replacement animals, semen production and evaluation, artificial insemination, and use of reproductive records. Extensive use of reproductive case studies. Advanced integration and application of factors important in the proper care and management of swine during farrowing and lactation. Overview of the critical management, housing, and financial considerations relevant to the successful operation of a swine nursery, grow-finish, or wean to finish enterprise. Overview of current issues affecting pork production in the United States, including, but not limited to: Development of skills to promote animal agriculture when dealing with the media and general public. Course includes response of swine to thermal environment ventilation system design and analysis, heating and cooling, systems and examples of various designs for all phases of production. Troubleshooting and energy analysis will be included as well. Course includes manure production rates, manure handling systems, storage and manure management planning for land applications. Some odor mitigation technologies will be covered. Effective employee management in swine production units. Principles, policies, and practices related to hiring, development and retention of employees, as well as fundamental organizational management. Experiential learning in the swine industry through opportunities that provide hands-on experience and exposure to the scope of pork enterprises. Students can expect to apply principles and practices already learned, and add practical experience to their skill sets and knowledge base. Introduction to global markets; cultural preferences and customs associated with the global swine industry. International trade regulations and potential impact of foreign animal diseases and bioterrorism affecting the U. ANS students cannot take the course for credit.. Principles involved with developing and implementing a swine feeding program, including fundamentals of feeding pigs, understanding nutrients used in pig diets, factors affecting nutrient recommendations, feeding systems for pigs, feed ingredients, and formulation of swine diets. This course introduces PreVeterinary track students to the scope of the veterinary profession and to current issues affecting veterinary professionals. The course will help students gain an understanding of the professional requirement of the veterinary school applications. Students will be expected to discuss current animal and public health issues as well as areas of national shortage in the veterinary profession. Animal Science Majors Only. This course will teach students how to navigate the career decision-making process to make an informed decision and discuss career options in the field of Animal Science. The course will also help students evaluate and develop their professional competencies and skills. Course sections offered as needed for international learning experiences in Animal Science involving international travel and N. State University Faculty-supervised learning in the non-U. A maximum of one credit hour per week of supervised study will be assigned, and the faculty member will provide students with a syllabus outlining the requirements for successful completion grade of "S". This course counts as a free elective. All expenses including travel, are the responsibility of the student. The student is also responsible for obtaining a valid passport. Cumulative GPA greater than 2. This course involves travel to Australia through N. Participants will have the opportunity to increase their knowledge and understanding in the principle areas of animal and veterinary sciences and Australian studies. Species studied include cattle beef and dairy , sheep, goats, pigs, native Australian animals, and non-native feral animals such as rabbits. All expenses, including the Study Abroad fee and airline travel, are the responsibility of the student. Conformation and function, performance, and soundness of the horse. Breed standards, rules, and regulations for evaluation, selection, and performance. Students will be exposed to

basic concepts associated with growth, development and value determination of livestock. Familiarization with official USDA grading standards for cattle, sheep, swine and goats is emphasized. Introduction to judging terminology, placing classes of livestock and justification through oral reasons. Processing and preserving fresh poultry, red meats, seafood, and eggs. Ante- and post-mortem events as they affect quality, yield, and compositional characteristics of muscle foods. Principles and procedures involved in the production of processed meat items. Introduction to the manufacture of dairy products. Dairy processing procedures from the farm, through the dairy plant, and to the consumer are studied.

Chapter 5 : Animal Science and Wildlife Biology

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Chapter 6 : Class Roster - Fall - Subject - Animal Physiology & Anatomy

Veterinary Science DVM, MS. Anatomy & Physiology of Animals Floron C. Faries, Jr., DVM, MS. Objectives The study of the structure of the animal body.

Chapter 7 : Anatomy and Physiology of Animals - Open Textbook Library

Course Description. General course in animal physiology emphasizing principles of operation, regulation, and integration common to a broad range of living systems from the cellular to the organismal level.

Chapter 8 : Anatomy and Physiology of Animals - Wikibooks, open books for an open world

Recommended for biological sciences majors, pre-med and pre-vet students, and beginning graduate students in physiology, engineering, nutrition, and animal science. BIOAP Teaching Experience.

Chapter 9 : Youth animal science: Anatomy and physiology - MSU Extension

At the undergraduate level, education in veterinary physiology is commonly found as classes within bachelor's degree programs in animal and veterinary sciences or animal physiology.