Career Pathways®
COLLABORATIVE

# ACHIEVEMENT LEVEL DESCRIPTORS

## FOR THE ANIMAL SYSTEMS ASSESSMENT

***Please note: Students performing at the Meets Expectations level also meet all standards at the Approaches Expectations level, and students performing at the Exceeds Expectations level also meet all standards at the Approaches Expectations level.***

## APPROACHES EXPECTATIONS

Students performing at the Approaches Expectations level can identify basic characteristics of animal cells, tissues, organs, and body systems. They are able to diagram a typical animal cell and identify the organelles. These students can describe the basic functions of animal cells in growth and reproduction as well as the properties, locations, functions, and types of animal organs and animal tissues. Additionally, they are able to describe the functions of the animal body systems and system components. They can explain the male and female reproductive organs of the major animal species. Students performing at this level are able to explain methods of determining animal health and disorders. They are able to identify common diseases, parasites, and physiological disorders that affect animals. Additionally, they are able to identify and describe zoonotic diseases. These students can explain characteristics of causative agents, vectors of diseases and disorders in animals, and the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.

Students who approach expectations are able to discuss the dangers involved in working with animals. They are able to explain the implications of animal welfare and animal rights for animal agriculture. These students can identify facilities needed to house and produce each animal species safely and efficiently, equipment and handling facilities used in modern animal production, and optimal environmental conditions for animals. They can list the general standards (such as environmental, zoning, or construction) that must be met in facilities for animal production. Students at this level can identify the origin, significance, distribution, and domestication of animal species and animal production practices that could pose health risks or that some consider to pose health risks. They are able to define major components of the animal industry and describe how animal identification systems can track an animal's location, nutrition requirements, production progress, and changes in health.

Students who perform at the Approaches Expectations level can identify ways an animal's health can be affected by anatomical and physiological disorders. They are able to explain how age, size, life cycle, maturity level, and health status affect the reproductive efficiency of male and female animals. These students can discuss the importance of efficient and economic reproduction in animals and define natural and artificial breeding methods. They can explain genetic inheritance in agricultural animals, the use of quantitative breeding values (such as EPDs) in the selection of genetically superior breeding stock, and the advantages of major reproductive management practices, including estrous synchronization, superovulation, flushing, embryo transfer, natural breeding, and artificial insemination.

Students who perform at this level are able to compare and contrast common types of feedstuffs (roughages, concentrates, additives, and supplements) as well as the roles they play in the diets of animals. They can

explain the importance of a balanced ration for animals and the purpose and benefits of feed additives and growth promotants in animal production. These students are able to identify and summarize essential nutrients required for animal health and analyze each nutrient's role in growth and performance. Additionally, these students can differentiate between nutritional needs of animal species. They can examine and summarize the meaning of various components of feed labels and feeding directions.

Finally, students performing at the Approaches Expectations level can explain the importance of the binomial system of nomenclature. They can identify major animal species by common and scientific names and identify and summarize common classification terms utilized in animal systems (such as external and internal body parts, maturity, mature male, immature female, animal products, and breeds). Students can evaluate an animal against its optimal anatomical and physiological characteristics. These students can identify animal production practices that could pose health risks to humans. They can also identify wholesale cuts of meat, as well as identify and describe foods derived from different classification of food products such as meat, egg, poultry, fish, dairy, fruits, vegetables, grains, legumes, and oilseeds. Students performing at this level are able to summarize characteristics of quality and yield grades of food products.

## MEETS EXPECTATIONS

Students performing at the Meets Expectations level can compare and contrast animal cells, tissues, organs and body systems, organ types and functions among animal species, and body systems and system adaptations between animal species. They are able to describe the functions of animal cell structures and the functions of major organs in the male and female reproductive systems. These students can detail the processes of meiosis and mitosis in animal growth, development, health, and reproduction. They can explain the relationship of animal tissues to growth, performance, and health. Students performing at this level are able to perform simple health-check evaluations on animals as well as diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites, and physiological disorders. Students evaluate preventive measures for controlling and limiting the spread of diseases, parasites, and disorders among animals. They can prepare animals, facilities, and equipment for surgical and nonsurgical veterinary treatments and procedures. Additionally, student performing at this level are able to explain the health risk to humans, historical significance, and potential future implications of zoonotic diseases.

Students performing at this level can outline safety procedures for working with animals by species. These students can explain how modern equipment and handling facilities enhance the safe and economic production of animals and evaluate an animal facility to determine if standards have been met. They are able to design programs that assure the welfare of animals and prevent abuse or mistreatment. Students can critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility. They can describe the effects of environmental conditions on animal populations and animal performance as well as evaluate and describe characteristics of animals that developed in response to the animals' environment, leading to their domestication. These students can outline the development of the animal industry and the resulting products, services, and careers, and they can also discuss consumer concerns with animal production practices relative to human health. Additionally, they are able to explain why animal trace-back capability—using individual animal and farm identification systems—is important to producers and consumers.

Students who perform at the Meets Expectations level are able to compare and contrast desirable anatomical and physiological characteristics of animals within and between species as well as quantitative breeding value differences between genetically superior animals and animals of average genetic value. They are able to

 

explain the advantages of using genetically superior animals in the production of animals and animal products. These students can also explain the materials, methods, and processes of major reproductive management practices, including estrous synchronization, superovulation, flushing, embryo transfer, and artificial insemination, as well as the processes of natural and artificial breeding methods. Students can summarize factors that lead to reproductive maturity. These students are able to evaluate reproductive problems that occur in animals.

Students performing at this level can determine the relative nutritional value of feedstuffs by evaluating their general quality and condition as a result of different processing methods. They can appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements, and performance. These students are able to discuss how feed additives and growth promotants are administered and the precautions that should be taken. They can differentiate between nutritional needs of animals in different growth stages and production systems (such as maintenance, gestation, natural, or organic) and can correlate a species' nutritional needs to feedstuffs that could meet those needs. These students are able to analyze and apply information from a feed label and feeding directions in order to feed animals.

Finally, students who meet expectations can compare and contrast the hierarchical classification of the major agricultural animal species and procedures to sustainably and efficiently develop an animal to reach its highest performance potential with respect to its anatomical and physiological characteristics. Additionally, students are able to explain how animals are classified using Linnaeus's taxonomical classification system. They can analyze the visual characteristics of an animal or animal product and factors that affect quality and yield grades of food products, select correct classification terminology when referring to companion and production animals, and identify retail cuts of meat. Students can discuss consumer concerns with animal production practices relative to human health. They are able to examine and summarize desirable qualities of food products derived from different classifications of food products.

## EXCEEDS EXPECTATIONS

Students performing at the Exceeds Expectations level can explain how the components and systems of animal anatomy and physiology relate to the production and use of animals, including the application of the processes of meiosis and mitosis to animal growth, development, health, and reproduction. Additionally, these students can explain the importance and uses of animal tissues in the agriculture industry and the impact of animal body systems on performance, health, growth, and reproduction. They are able to describe the molecular makeup of animal cells and its importance in animal production and management. Students can relate the importance of animal organs to the health, growth, and reproduction of animals and are able to select breeding animals based on characteristics of the reproductive organs. These students are able to perform diagnostic tests to detect health problems in animals. They can treat common diseases, parasites, and physiological disorders of animals as well as perform surgical and nonsurgical veterinary treatments and procedures in animal health care. They are able to design and implement health maintenance as well as disease and disorder prevention plans for animals in their natural and/or confined environments. Students can implement zoonotic disease prevention methods and procedures for the safe handling and treatment of animals.

Students who perform at the Exceeds Expectations level can interpret animal behaviors and execute protocols for safe handling of animals. They can implement quality-assurance programs and procedures for animal production. These students are able to design an animal facility—focusing on animal requirements, efficiency, safety, and ease of handling—that meets standards for the legal, safe, ethical, and efficient

 

production of animals. They can make selections of equipment and implement animal handling procedures and improvements to enhance production efficiency. These students can establish and maintain favorable environmental conditions for animal growth and performance. Students performing at this level are able to predict adaptations of animals to production practices and environments as well as trends and implications of future development of the animal systems industry. Additionally, students can implement a program to assure the safety of animal products and an animal and/or premises identification program.

Students performing at this level evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth, and reproduction as well as selecting animals for reproductive readiness. These students are able to treat or cull animals with reproductive problems. They can select a breeding system based on the principles of genetics, animal breeding methods based on reproductive and economic efficiency, and animals based on quantitative breeding values for specific characteristics. Students who exceed expectations can demonstrate procedures for estrous synchronization, superovulation, flushing, embryo transfer, artificial insemination, and other reproductive management practices.

Students who exceed expectations are able to select appropriate feedstuffs for animals based on factors such as economics, digestive system, environment and economy, and nutritional needs. They can formulate animal feeds based on nutritional requirements using feed ingredients for maximum nutrition and optimal economic production. Students can recommend and administer feed additives and growth promotants, and they can assess nutritional needs for an individual animal based on its growth stage and production system. Additionally, these students are able to design and defend the use of a nutritional program by demonstrating the relationship between the nutrient requirements and the feedstuffs provided. They can evaluate and summarize the potential impacts, both positive and negative, of compliance or noncompliance with a feed label and feeding directions.

Finally, students performing at the Exceeds Expectations level can classify animals according to the taxonomical classification system. They are able to appraise and evaluate the economic value of animals for various applications in the agriculture industry. Students apply their knowledge of classification terms to communicate with others about animal systems in an effective and accurate manner. They can choose, implement, and evaluate sustainable and efficient procedures (such as selection, housing, nutrition, and management) to produce consistently high-quality animals that are well suited for their intended purposes. These students are able to implement a program to assure the safety of animal products and outline procedures to assign quality and yield grades to food products according to industry standards. Students can evaluate and grade food products from different, and they can explain the importance of meat cut identification and how it relates to animal production.

 