

# Department of Animal and Veterinary Sciences (AVSC)

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## Vision

The department of Animal and Veterinary Sciences strives to be recognized as a center of excellence in animal and veterinary sciences education, research and outreach. The Department works to promote and support the veterinary science program to attract and maintain a diversified and highly qualified student body.

## Mission

The main function of the Department of Animal and Veterinary Sciences is to produce qualified graduates capable of serving the region in all areas of animal and veterinary sciences: research, services, business, and education. The Department offers a BS degree in Veterinary Sciences and two graduate programs of study leading to MS degrees in Animal Science and Poultry Science that prepare students for life-long learning and professional advancement in the field. The Department is also engaged to serve the animal and veterinary sector in Lebanon and the region by providing extension work, consultations, and diagnostic support.

## Undergraduate Program

The main function of the Animal and Veterinary Sciences Department is to produce qualified graduates capable of serving the region in all areas of animal and veterinary sciences: research, services, business, and education.

The department participates in offering courses within the FAFS undergraduate core program. Selected senior courses that cover areas of major importance in animal agriculture (i.e., nutrition, physiology, management, production) are also offered to students wishing to select an area of emphasis in animal sciences.

The department also offers the BS degree in Veterinary Sciences that prepares the graduates for life-long learning and professional advancement in the field. In this program students will get the solid basics in animal health, husbandry, nutrition, and breeding. The curriculum is integrative, multidisciplinary and multifunctional allowing graduates to have broader abilities in finding jobs in the local, regional and international markets. This program will also prepare students to pursue their graduate studies in poultry and animal sciences as well as in the basic medical sciences. The courses of the first two years in the Veterinary Sciences program will satisfy most of the premedical requirements needed to enter the Faculty of Medicine at AUB.

The following courses are offered by the department:

# Course Descriptions

## Core Courses for the BS Degree in Agriculture

<b>AVSC 222</b>	<b>General Livestock Production</b>	<b>2.3; 3 cr.</b>
Modern principles and practices in beef, sheep, and dairy production and reproduction.		
<b>AVSC 224</b>	<b>Agricultural Microbiology</b>	<b>2.3; 3 cr.</b>
A course that covers basic and applied microbiology. The basic microbiology includes bacteriology, virology, parasitology, and immunology, and the applied microbiology includes veterinary, soil, water, and food microbiology.		
<b>AVSC 226</b>	<b>Poultry Production</b>	<b>2.3; 3 cr.</b>
Modern principles and practices in poultry production with special emphasis on Middle Eastern conditions. <i>Prerequisite: AVSC 271.</i>		
<b>AVSC 243</b>	<b>Genetics</b>	<b>3.0; 3 cr.</b>
Principles of inheritance, with an introduction to modern genetics.		
<b>AVSC 271</b>	<b>Animal Nutrition</b>	<b>3.0; 3 cr.</b>
Structure and functioning of digestive systems of livestock and poultry; bioenergetics, nutritional deficiencies, and nutrient requirements of farm animals. <i>Prerequisite: NFSC 261.</i>		
<b>AVSC 275</b>	<b>Anatomy and Physiology of Farm Animals</b>	<b>3.0; 3 cr.</b>
Systematic anatomy and physiology of farm animals.		

## Core Course for the BS Degree in Agribusiness

<b>AVSC 220</b>	<b>Livestock Production</b>	<b>3.0; 3 cr.</b>
The course introduces the following: types and breeds of livestock, terminology, methods, management systems, techniques of animal and poultry production and consumer impact.		

## Elective Courses for the BS Degree in Agriculture

<b>AVSC 241</b>	<b>Principles of Dairying</b>	<b>2.3; 3 cr.</b>
Management, housing, feeding, breeding, and record-keeping in dairy production.		
<b>AVSC 242</b>	<b>Small Ruminant Production in Arid Regions</b>	<b>2.3; 3 cr.</b>
Breeding, feeding, and management of sheep and goats under arid conditions.		
<b>AVSC 276</b>	<b>Animal Physiology Laboratory</b>	<b>0.3; 1 cr.</b>
<i>Pre- or corequisite: AVSC 275.</i>		
<b>AVSC 277</b>	<b>Animal Breeding</b>	<b>2.0; 2 cr.</b>
Principles of permanent improvement of animal and poultry production. <i>Prerequisite: AGRL 243 or BIOL 223.</i>		
<b>AVSC 278</b>	<b>Feeds and Feeding</b>	<b>2.3; 3 cr.</b>
Characteristics, conservation, and preparation of feeds; feeding of various classes of livestock.		
<b>AVSC 279</b>	<b>Companion Pet Birds and Animals</b>	<b>3.0; 3 cr.</b>
Breed and stock selection, equipment, stocking densities, routine management, rearing, feeding, behavior and interaction with humans, optimum production, and health care of pet birds and pet animals. <i>Free elective.</i>		

**AVSC 280**                    **Aquarium, Marine, and Farming Fish**                    **3.0; 3 cr.**  
A course that covers the different fishing techniques, fish farming, characteristics of fish, comparison of classes of fish, the setup of fresh water and marine aquariums, and the common diseases of fish. *Free elective.*

**AVSC 281**                    **Production of Novel Avian Species**                    **3.0; 3 cr.**  
Management practices in the production of economically beneficial avian species other than the domestic chicken (e.g., ratites, turkey, water fowl, etc.).

**AVSC 282**                    **Pet Birds and Animals**                    **3.0; 3 cr.**  
A course that describes the anatomy and physiology of pets belonging to mammalia, reptilia, aves, and osteichthyes. The history, classification, breeds, selection, rearing, feeding, production, and health of sixteen pets will be studied. *Prerequisite: BIOL 200.*

**AVSC 299**                    **Special Topics in Animal Sciences**                    **2 cr.**  
Directed study. Tutorial. *Prerequisites: Fourth year standing and consent of instructor.*

## **Core Courses for the BS Degree in Veterinary Sciences**

**AVSC 201**                    **Microbiology I+II (Bacteriology and Virology)**                    **1 cr.**  
The course summarizes the main characteristics of bacteria, fungi and viruses including their morphology, resistance, molecular structure, virulence factors, antigenicity, and animal and human pathogenicity.

**AVSC 202**                    **Animal Breeding and Genetics I**                    **2 cr.**  
The course introduces the principles of Mendelian and population genetics and their application in breeding, improvement and management of farm, companion and pet animals with the goal of profitable animal production and improved health status. Selection and breeding methods are elaborated in addition to basic topics related to biotechnological advances in this field and its role in relation to other aspects of animal production.

**AVSC 203**                    **History of Veterinary Medicine**                    **1 cr.**  
The course explores the beginnings of veterinary medicine from ancient times to the middle ages and ending with modern times. The different specializations and branches of veterinary medicine are also explored.

**AVSC 204**                    **Pathology I**                    **2 cr.**  
The course is divided into two main topics. General pathology describes the causes and the common nature of disease processes including the genetic and immunological disorders, inflammation, neoplasia, and malformation. Systemic pathology discusses the pathological changes of specific diseases according to the organ-systems and the whole pathology of certain infectious and non-infectious diseases.

**AVSC 205**                    **Topographic and Applied Anatomy**                    **2 cr.**  
The course is divided into six major sections starting with the palpable landmarks of the body followed by the topography of the thorax, abdomen, pelvic cavity and ending with the limbs. Superficial veins, sites of venous blood sampling, and investigation points will be explored in different body parts.

**AVSC 206**                    **Clinical Diagnostics**                    **2 cr.**  
The course deals with examination techniques and symptomology of internal diseases. The course is organized according to organs and organic systems, with special attention to the corresponding instrumentation used and species specific differences.

- AVSC 207                    Microbiology III (Veterinary Immunology)                    1 cr.**  
The subject introduces the protective functions of the hosts to different microbes, and the humoral and cellular immune system, and provides the theoretical background of immune-prophylaxis against infectious diseases.
- AVSC 208                    Animal Breeding and Genetics II                    2 cr.**  
The course teaches the general and specific significance of cattle, swine, sheep, goat, horse, poultry, dog, cat and fur animal breeding in the world. It introduces the main productive characteristics of the internationally recognized breeds and types of the above mentioned species. The various methods of applied breed improvement and heritable diseases are discussed in detail according to the different species. The local aspects and facilities receive particular emphasis.
- AVSC 209                    Animal Nutrition + Dietetics I                    2 cr.**  
The subject consists of an introduction to the basics of animal nutrition, characteristics of feedstuffs, animal feeding, and nutrition. The effect of different feedstuffs and feed additives on the animals' health, production, and reproduction will be addressed in addition to the techniques of balanced ration formulation.
- AVSC 210                    Applied Ethology                    2 cr.**  
Applied ethology is the branch of animal science, which on the basis of the description of the innate behavior of farm animals and pets, studies the behavior of animals kept in intensive farming systems or, in the case of companion animals, kept in the close vicinity of humans. It also studies the effects of housing, nutrition, and attendants' care on the establishment of behavioral patterns. This subject also deals with the formation, prevention, and treatment of abnormal behavior (misbehavior, ethostasis) and describes ethical aspects of animal welfare.
- AVSC 211                    Microbiology I + II Laboratory (Bacteriology and Virology)                    1 cr.**  
The AVSC 211 laboratory course will introduce the students to the most recent technologies used in collection of animal specimens, transportation of specimens from the field to the laboratory, cultivation of organisms, purification of cultures, identification of major etiologic agents in different pets and farm animals, and procedures followed in transportation of pure isolates to reference laboratories around the world for identity confirmation.
- AVSC 212                    Microbiology III Laboratory (Veterinary Immunology)                    1 cr.**  
The AVSC 212 laboratory course will introduce the students to the most recent technologies used in collection of lymphoid system specimens, transportation of specimens from the field to the laboratory, study the normal versus the abnormal lymphoid organs and their histology, the different methods used in quantification of the cell-mediated and humoral immunities, and the serological methods used in diagnostics of animal diseases.
- AVSC 213                    Comparative Vertebrate Anatomy                    4cr.**  
This course introduces the students to the field of Comparative Vertebrate Anatomy. It is organized in a manner within the unifying framework of form, function, and evolution.
- AVSC 214                    Veterinary Parasitology                    3cr.**  
This course deals with the morphological and biological characteristics of various important parasites in veterinary medicine. At the practical level students will become familiar with the lifecycles of the various parasites of veterinary significance.
- AVSC 215                    Veterinary Embryology                    4cr.**  
This course describes changes on the cellular, molecular and tissue levels before the birth of an animal to help in understanding the normal and abnormal structural developmental processes.