

### **Introduction in Animal Science**

*Description:* Basic concepts and definitions of animal production science. Importance of farm animals for humans. Productive animals. Productive characteristics of farm animals. Farm animal health data. Health and production interactions in farm animals. Production of food of animal origin.

*Learning Objectives:* Understanding the conditions and principles of animal production science and the contribution to production.

### **General Animal Husbandry I - Assessment of Farm Animals**

*Description:* Significance, object and mission of animal husbandry. The domestication of farm animals. General principles of ethology and welfare. Definition of breed, its subdivisions and importance of conservation of rare breeds. Description of the main breeds. Basic principles of physiology of development and breeding of dog, cat, equidae, rabbits and birds and relevant legislation. Estimation of age and identification of farm animals. Relevant legislation.

*Learning objectives:* Knowledge of the principles of farm animal management. Understanding of animal breeding legislation

### **Feedstuffs**

*Description:* Basic concepts of animal feeds and its ingredients, data for their chemical analysis and assessment of their dietary value. Distinction and classification of feed in various categories and reference to the main animal feedstuffs, their preservation methods, their main dietary characteristics and recommendations for their use in animal nutrition. Feed additives, their categories and properties and recommendations for their use in animal rations.

*Learning Objectives:* Understanding the concept of animal feed and nutrients. Knowledge and distinction of different feed. Knowledge of laboratory methods for analyzing nutrients. Knowledge and application of case-by-case methods of preservation and storage of animal feed.

### **Animal Housing I - Animal Housing II - Automations in Animal Production**

*Description:* General planning principles based on the welfare, biosafety and safety of employees. Environmental legislation. Description of pig farms and poultry farms. Materials and types of constructions. Specifications and types of feeders, rest areas, special constructions, determination of parameters for cooling and ventilation, manure management. Architectural design and location, based on the operation and compliance with environmental requirements. Determination of the environmental footprint.

*Learning objectives:* Carrying out a basic evaluation of existed facilities. Calculation of cooling and ventilation requirements. Environmental footprint assessment of livestock facilities.

### **Ruminants Nutrition**

*Description:* Definitions and properties of diets, ruminant feeding technique. Presentation of the needs of ruminants for energy and nutrients, based on the zootechnical model applied. Methods of preparation of rational diets for ruminant farm animals (such as cattle, sheep, goats, deer). Qualitative and quantitative possibility of using the various feeds, general logic in formulation of a diet, formulation of nutrition programs in order to meet the needs of different farmed animals based on sex, age, production direction and the quality of the received products, ensuring the health of the livestock and farm economics.

*Learning objectives:* Knowledge of the needs of ruminant farm animals at different stages of production. Knowledge of feeding techniques in ruminants. Preparation of rational diets.

### **Innovative animal products**

*Description:* Introduction to innovation (Innovative methods of processing food of animal origin. Innovation in the packaging and preservation of food of animal origin. New ingredients of animal

origin. Functional foods of animal origin.) Elements of research and development of new products of animal origin (Criteria for the production of new foods. Design of new products, decision making, selection of development stages. Quality evaluation of new products. Market research for new products. Innovative food safety – Legislation). New milk and meat products (Biofunctionality of milk and meat. Development of new dairy and meat products with biofunctional character). New products of other animal foods -catches, honey, eggs, snails, etc. ( Biofunctionality of other animal foods. Development of new products of other animal foods with biofunctional character). New ingredients of animal origin (Alternative sources of protein. Proteins from insects. Biooperative peptides of products of animal origin).

Learning objectives: Upon completion of the course the student should have basic knowledge of developing new animal food products, knowing elements of food innovation, the new and bio-functional ingredients of animal food and how to utilize them.

### **Quality systems and certification**

Description: Introduction to applied quality systems in animal production and animal origin foods. Application of different systems.

Learning objectives: To understand what quality means for the producer and the consumer. To be able to imply quality systems in practice.

### **Food of animal origin and health – General principles of food chain integrity**

Description: Food chain. Livestock farms in the context of food production. Introduction to integrated health. Foodborne infections. Production of food of animal origin. Indicators of health and safety in food. Control systems in the production of food of animal origin.

Learning objectives: Understanding the importance of food production in the context of animal production.

### **Small ruminants husbandry**

Description: Sheep farming, goat farming: structure and meaning. Origin, classification, external morphological characteristics, productive properties, age estimation, breeds, reproduction, genetic improvement, sheep and goat breeding. Relationships between small ruminant breeding systems and effects on the environment. Behavior and well-being during breeding. PC templates and software as tools for their study and management.

Learning objectives: Knowledge of modern technical and scientific methods in sheep and goat breeding. Management of sheep and goat farms, for high quality characteristics and low cost.

### **Pastures management**

Description: Definitions, classification and inventory of natural pastures and artificial meadows. The contribution of abiotic and biotic factors to the characteristics of natural pasture vegetation. The flora of natural pastures (nomadic and poisoning plants). Grassland plants and creation of artificial grasslands. Management of pastures and artificial meadows. Production determination (quantitative and qualitative), grazing capacity assessment, grazing calculation, rational use. Livestock breeding systems. Pasture improvement (infrastructure, vegetation management, clearing, nutrient addition, soil transformation, flora renewal, irrigation, drainage). Grazing and its parameters. Possibilities and limiting factors for the breeding of herbivores using grazing material. Environmental effects of grazing. Contribution of the new technology in the management of natural pastures and artificial meadows. PC templates and software as tools for their study and management.

Learning objectives: Knowledge of the importance of pastures in animal production. Knowledge of pasture improvement technique. Understanding the use of pastures

### **Forage Plants Cultivation**

Description: Plant cultivation for livestock use. Biology and properties of forage plants. Processing of forage plants. Use of them as animal feed. Advantages - disadvantages and benefits - side effects of their use.

Learning objectives: Understanding the conditions and the production framework of forage plants in Greece.

### **Apiculture**

Description: Morphology, anatomy and physiology of the bee. Bee biology. Nutrition and feeding of bees. Basic knowledge of apiary management. Bee defense mechanisms. Hygiene measures. Honey as a food. Honey counterfeits.

Learning objectives: Knowledge of modern technical and scientific methods in Apiculture. Ability to manage beekeeping holdings with high quality characteristics and low costs.

### **Milk Technology**

Description: Composition and physicochemical properties of milk. Microbiology of raw milk and pathogens that affect its safety. Heat treatment of milk (pasteurization-sterilization). Sterile condensed milk, sweetened condensed milk, powdered milk. Dairy fermentation products (yogurt, sour milk, kefir, etc.). Cream. Butter. Ice cream. Cheeses and their production technologies. PDO cheeses

Learning objectives: Knowledge of the methods of preservation and processing of milk and their effect on it.