FARM ANIMAL NUTRITION

COURSE OUTLINE

ΓΕΝΙΚΑ

SCHOOL	AGRICULTURE SCIENCE		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
STUDY LEVEL	5 years		
COURSE CODE	CP416	SEMESTER	4th
COURSE TITLE	FARM ANIMAL NUTRITION		

INDEPENDENT TEACHING ACTIVITIES *In case ECTS are awarded for distinct parts of the course e.g. Theory Lectures, Laboratory Practicals etc. If ECTS are awarded uniformly for the entire course, give the weekly teaching hours and total ECTS.*	**WEEKLY COURSES**	**CREDITS**
Theory Lectures	3	
Exercises	3	
TOTAL		6

COURSE TYPE *Background, Basic knowledge, Field of Science, Skill development*	General background and knowledge regarding General principles of animal nutrition.
PREREQUISITES:	No
LANGUAGE:	Greek
IS THE COURSE OFFERED for ERASMUS STUDENTS?	No
COURSE WEB PAGE (URL)	https://food.uth.gr/farm animal nutrition

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult. Appendix A

• Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework

• Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning

And Appendix B

- *• Guidelines for writing Learning Outcomes*

General principles of Animal Nutrition, Concepts and Definitions, Ration, Ration Properties, Ruminant Animal Nutrition, Monogastric Animal Nutrition. Organic breeding of productive animals. Nutrition and Quality of Livestock Products. Effect of diet on the consistency and quality of milk and carcass. Animal welfare and quality of animal products.
The course refers to the nutrition of dairy cows, breeding calves, growing-fattening calves, sheep and goats, pigs and birds (nutritional needs for maintenance and production: in energy, proteins, vitamins and minerals - Preparation of rations).
The course aims to acquire the necessary and modern scientific knowledge for the preparation of balanced diets for cattle, sheep, goats, pigs and birds depending on their production direction, age, physiological stage and production system, with the aim of developing their production potential to the maximum possible and producing high quality products while ensuring their health and well-being and the minimum environmental impact.
In particular, the following are analyzed:
– The basic principles of feeding farm animals (ration properties, feeding efficiency, feeding technique and systems, etc.).
– The physiological bases of farm animals and the particularities of each species and category thereof.
– The detailed feeding of dairy cows, meat cows, bulls, pups and growing cattle, breeding calves, sheep, goats, lambs, kids, pigs and birds.
– The organic breeding of productive animals.
– The effect of nutrition on the reproductive function of productive animals.

– *The effect of nutrition on the quality of livestock products produced (milk, meat).*
– *The interaction of diet and climate change.*
– *The relationship between nutrition and welfare of productive animals*

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

- *Theoretical thinking and the ability to translate theory into practice*
- *Search, analyze and synthesize data and information, using the necessary technologies*
- *Decision-making*
- *Autonomous work*
- *Teamwork*
- *Promoting free, creative and inductive thinking*
- *Development of lateral and divergent thinking*

COURSE CONTENT

Week 1
General principles of animal nutrition
Concepts and definitions
Ration - Ration Properties
Effectiveness of nutrition
Introduction - Economics of the ration
Exploitation of the ration
Checking the effectiveness of nutrition
Feeding systems
Technique of feeding
Preparation of rations
Administration of the ration
Water consumption
Methods of mineral administration to ruminant animals
Choice of mineral salt administration method

Week 2
Normal feeding bases of ruminant's
Symbiotic phenomena of prostomata
Symbiotic phenomena of prostocombatants and exploitation of the diet
Minimum and maximum use of coarse fodder
Feeding cattle
Feeding dairy cows
Diet in the dry period
Metabolic diseases of dairy cows

Week 3
Feeding cows in the lactation period
Physical condition of cows
Dairy cow feeding systems
Peculiarities of feeding high-yielding cows
Replacement calf diet
Feeding broiler cows
Feeding bulls
Feeding of Growing and Fattening Ruminant Animals
Growing ruminants (calves and lambs and kids)
Physiological bases
Feeding newborns
Ingredients of artificial milk and starting mixture
Principles of composition of artificial milk and starting mixture
Diet after weaning
Fattening cattle
Fattening of milk calves (veal)

Fattening of calves of large body weight (400-650 kg)
Calf fattening in Greece

Week 4
Feeding sheep and goats
Import
Physiological bases
Feeding sheep
Physical (nutritional) status of ewes
Effect of the level of nutrition on milk production
Effect of the level of N-based substances in the diet
Feeding intensively reared sheep
Feeding extensively farmed sheep
Goat diet
Feeding male animals (rams and goats)
Lamb and kid diet
Feeding newborns
Feeding of weaned lambs and kids
Metabolic diseases in sheep and goats - Introduction
Prestomach disorders
Disorders in the small intestine
Disturbances due to inadequate administration of N-substances
Disorders due to excessive administration of N-substances
Disorders due to inadequate mineral administration
Breast edema
Metabolic diseases of lambs and kids
Urolithiasis
Rickets
Chronic acidosis
Milk indigestion
Loss of passive immunity
Neonatal hypoglycemia

Week 5
Organic Ruminant Farming
General principles
Rules for the operation of organic farms
Livestock (genetic material)
Building facilities and equipment
Conditions of rearing
Nutrition
Quality of organic products
Organic ruminant farming in Greece
Effect of Diet on Reproduction
Reproductive function of dairy cows
Increase ration energy density
Reduction of fat content of milk
Breeding function of broiler cows
Reproductive function of calves

Week 6
Breeding function of ovine and caprine animals
Embryonic programming
Adolescence of replacement animals
Reproductive function of male animals
Nutrition and Quality of Livestock Products
Definition of quality

Milk - Milk ingredients
Physicochemical properties of milk
Organoleptic properties of milk
Effect of diet on the chemical composition of milk
Dietary value of milk
Week 7
Meat - General
Effect of diet on carcass composition
Effect of diet on carcass quality
Nutritional value of meat
Health-related properties of meat
Climate Change and Animal Production
Impact of climate change on animals
Greenhouse gases emitted from farmed livestock
Carbon dioxide (CO_2)
Methane (CH_4)
Nitric oxide (N_2O)
Livestock production systems and greenhouse gas emissions
Factors affecting the CF of animal products on the plant
Production
Calculation of greenhouse gas emissions from livestock
Strategies to reduce greenhouse gas emissions from
productive animals
Waste management
Findings - Conclusions

Week 8
Nutrition and Well-being
Import
Definition of well-being
Basic principles of freedom and care of farm animals
Relationship between nutrition and well-being
Dairy cows
Broiler cows, sheep and goats
Growing – fattening ruminants and milk calves
Welfare and quality of animal products
Feed and Feed Additives
General definitions
Feed ingredients
- Feed nutrients
- Ingredients harmful to animal health or anti-dietary agents
- Inert feed ingredients
Distinction - Classification of feedingstuffs
Description of simple feed
Coarse fodder
Green vegetable matter
Grass
Other types of green plant matter

Week 9
C.P.Y maintenance products
Drying of H.P.H. and manufactured products
Silage of H.P.H. and manufactured products
By-products of threshing
Condensed feedingstuffs
- Fruits-seeds
- By-products of agro-industries

- Animal feed
- Mineral feed
Feed technology
Feed additives
- Nutrient supplements
- Auxiliary substances
- Improving nutrient digestion
- Preventive factors of disease

Week 10
Principles of Animal Nutrition
Types of rations
Properties of the ration
- The balance of the diet
- Saturation capacity of the ration
- Suitability of feedingstuffs
- Other properties of the ration
Establishment of the ration
Economic evaluation of feed
-Ruminants
- Pigs and birds
Methods of drawing up rations
- The method of Linear Programming.
- The mixing method
- Balancing basic rations

Week 11
Effectiveness of nutrition
- Operation of the ration
- Factors influencing PRA
- Means of improving the CC
- Increase digestibility
- Increase utilization during metabolism
- Influencing the production of the animal
- Change in food consumption
Feeding systems
Technique of feeding
Preparation of the ration
Administration of the ration

Week 12
Feeding pigs
Feeding pig breeders
- Effect of nutrition on the breeding cycle
- Nutrition during pregnancy
- Nutrition during lactation
- Nutrition after weaning
- Boar diet
Feeding growing pigs
Feeding suckling piglets
Physiological peculiarities of newborns
Feeding piglets
Feeding weaned piglets
Feeding young pigs
Calculation of needs
Feeding young breeding pigs
Fattening of pigs

- Simple diet dry rations
- Liquid rations
- Mixed diet diets

Week 13

Feeding birds

- Production objectives of poultry farming
- Technique of feeding hens
- Factors affecting food consumption

Feeding hens of egg type

Feeding in the period of growth

Feeding during the period of egg production

- Productive characteristics of laying hens
- Needs of laying hens
- Specifications of feeding mixtures for laying hens
- Feeding breeding hens

Feeding breeding hens of broiler type

- Nutrition during the period of growth
- Feeding during the period of egg production

Feeding broiler chickens

- Data on the development of hens
- Data for determining the needs of hens
- Specifications of feeding mixtures for hens

TEACHING METHODS--ASSESSMENT

METHOD OF DELIVERY *Face to face, Distance learning, etc.*	*Face to face*
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	**a. Digital media will be used for the teaching of the course (presentations using projector, PowerPoint, Excel, videos, and photos), while communication with students can also be done online (questions, exercises).** **b. There will be demonstration-learning of finding modern scientific literature from the internet (international scientific journals).** **c. The training of rational diets of farm animals will be taught using a computer.** **d. There will be a daily educational trip to a farm animal breeding unit (with cows, calves, sheep, goats or pigs).**
TEACHING ORGANIZATION *The method and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography Study & Analysis, Tutorial, Internship (Placement), Clinical Practicing, Art Workshop, Interactive Teaching, Educational visits, Project Writing, Writing a project / assignments, Artistic creation, etc.* *The student's study hours for each learning activity are listed as well as the hours of unguided study so that the total workload at semester level corresponds to ECTS standards*	

Activity	***Semester Workload***
Lectures in Auditorium	39
Laboratory field exercise / Laboratory exercises	39
Independent study	69
Study visits	3
Total Course (25 hours of workload per credit)	***150***

STUDENT EVALUATION *Description of the evaluation process*	I. Written final exam for the theory (100%) including: Questions for the development of topics in known material of suggested bibliography.

Assessment Language, Assessment Methods, Formative or Summative, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay/Report, Oral Examination, Public Presentation, Laboratory Work, Clinical Examination of a Patient, Artistic Interpretation, Other/Others *Explicitly defined evaluation criteria and whether and where they are accessible to students are mentioned.*	Questions that require synthesis of information and critical thinking by the student. II. Presentation by students of individual or group work for the laboratory (100%) or written examination for the laboratory (100%) if it is not possible to present papers.

RECOMMENDED-BIBLIOGRAPHY

a. Course bibliography (Eudoxus):
Zervas, G.P. (2013). Feeding ruminant animals. Stamoulis Publications S.A., Athens. ISBN: 9789603519416.
b. Course bibliography (Eudoxus):
Zervas, G.P. (2004). Farm Animal Nutrition. Stamoulis Publications S.A., Athens. ISBN: 9603515205.

-Related scientific journals:

Animal Journal: https://www.Cambridge.org/core/journals/animal#
Czech Journal of Animal Science: https://www.agriculturejournals.cz/web/cjas/
Animal Nutrition: https://www.keaipublishing.com/en/journals/animal-nutrition/
Canadian Journal of Animal Science: https://cdnsciencepub.com/journal/cjas