COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF FOOD AND NUTRITION SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES			
COURSE CODE	680	**SEMESTER**	5th
COURSE TITLE	ANIMAL NUTRITION		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures and Practice		4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/6096/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The objective of the course ANIMAL NUTRITION is to teach the students how to produce safe food of animal origin (milk, meat) of high quality who meets the consumers preferences and health standards, high organoleptic characteristics, low cost, and with no adverse effects on the environment and livestock welfare, through proper and balanced feeding.

The lectures aim to familiarize students with the principles of animal nutrition, the livestock production systems, the feeding practices of ruminants (dairy and beef cows, sheep, goats, calves,

lambs, kids) and monogastric animals (pigs, poultry) according to their production, type, age, physiological stage etc. with particular emphasis on the way the feeding effects the yield, the quality and the chemical composition of the animal origin products.

Through the laboratory exercises, the course theory is consolidated, and students gain an understanding of the formulation of animal requirements at each productive stage.

Upon successful completion of the course, students will be able (according to Bloom's taxonomy) to:

- Understand the importance of knowledge in Animal Nutrition for keeping up with rapid scientific developments in the field of nutrition, and particularly in Animal Production (COMPREHENSION).
- Calculate the energy and nutrient requirements of animals, as well as determine the appropriate type of feedstuffs during the various productive phases of farm animals (APPLICATION).
- Search for additional and more specialized relevant knowledge in international scientific literature, especially in specialized online resources that are recommended (ANALYSIS/SYNTHESIS).
- Develop further individual and teamwork skills through the implementation of laboratory exercises, as well as through discussion and presentation of the results of their work (CREATION/APPLICATION).

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Teamwork	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*

The course encourages students to search for, analyse, and synthesize data and information using the necessary technologies, while also promoting free, creative, and inductive thinking.
The laboratory exercises are adapted to new situations so that students can acquire skills and competencies such as decision-making.
In addition, working in an interdisciplinary environment is cultivated.

3. SYLLABUS

THEORY

1) Introduction to Animal Nutrition

2) Physiology of Nutrition

3) Nutrition and Quality of Livestock Products
   - Definition of quality
   - Milk

- Effect of nutrition on meat composition and quality
- Nutritional value of meat
- Meat properties related to human health
- Eggs
- Animal welfare and quality of animal products

4) Principles of Animal Nutrition
- Concepts and definitions
- Ration
- Ration characteristics
- Feeding efficiency
- Nutrition systems
- Feeding techniques

5) Nutrition of Ruminants
- Dairy cows
- Beef cattle
- Growing cattle
- Sheep and goats

6) Nutrition of Monogastric Animals
- Swine nutrition
- Nutrition of breeding swine
- Nutrition of growing-finishing pigs
- Poultry nutrition
- Nutrition of laying hens
- Nutrition of broiler chickens
- Nutrition of fattening poultry

LABORATORY

1) Feedstuffs
- Definitions
- Classification of feedstuffs
- Roughages
- Concentrates
- Weende analytical method
- Tables of chemical composition of feedstuffs
- Feed technology
- Feed additives

2) Model Formulation of a Ration

3) Intensive and Extensive Feeding Systems
- Definitions – General
- Intensive feeding systems for farm animals
- Semi-intensive feeding systems for farm animals
- Extensive feeding systems

4) Feeding Systems for Swine
▪ Definitions – General
▪ Characteristics of the swine digestive system
▪ Nutrition of intensively raised pigs

5) Feeding Systems for Poultry
▪ Definitions – General
▪ Nutrition of laying hens
▪ Nutrition of broiler chickens

6) Organic Farming of Livestock
▪ General principles of organic livestock farming
▪ Operational rules for organic farms
▪ Quality of organic products

7) Recent Developments
▪ Nutrition and the circular economy
▪ Nutrition and the environment
▪ Competition for plant raw materials between human and animal nutrition
▪ Potential alternative feedstuffs

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Support of the Learning Process through the e-class Electronic Platform</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>26</td></tr><tr><td>Study & literature analysis</td><td>26</td></tr><tr><td>Interactive teaching</td><td>20</td></tr><tr><td>Independent study</td><td>53</td></tr><tr><td>Course total</td><td>125</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation,</td><td>Written final examination covering the theory and the laboratory exercises of the course

Special learning difficulties:</td></tr>
</table>

laboratory work, clinical examination of patient, art interpretation, other *Specifically defined evaluation criteria are given, and if and where they are accessible to students.*	Students with special learning difficulties in writing and reading (as they are certified and characterized by a competent body) are examined based on the procedure provided by the Department.

5. ATTACHED BIBLIOGRAPHY

Suggested Bibliography in English Language:

- Animal Nutrition, Mc Donald, P., Edwards, R.A., Greenhalgh, J.F.D. and Morgan, C.a. 2002. Prentice Hall, Pearson Education Limited, ISBN 0 582 41906 9

Related academic Journals:

- Animal Feed Science and Technology
- Poultry science
- Journal of Animal Physiology and Animal Nutrition
- Journal of Animal Science
- Animals
- Animal Nutrition
- Small Ruminant Research