

Ruminants Nutrition [39]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Required]		
COURSE CODE	39	SEMESTER	8 th
COURSE TITLE	RUMINANTS NUTRITION		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		4	3
Laboratory exercises		2	2
Total		6	5
COURSE TYPE	Scientific area		
PREREQUISITE COURSES:	Nutritional Physiology of Animals		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	Yes		
COURSE WEBSITE (URL):	https://mediasrv.ua.gr/eclass/courses/EZPY180/		
TEACHING STAFF:	Theory: E. Tsiplakou, A. Mavrommatis Laboratory: E. Tsiplakou, A. Mavrommatis, E. Katsarou		

(2) LEARNING OUTCOMES

Learning outcomes
Upon successful completion of the course, students will be able (according to Bloom) to: - Explain the principles of ruminant nutrition and feeding strategies for different species (cattle, sheep, goats) and production categories (Knowledge / Comprehension). - Analyze the nutritional requirements of ruminants for various productive stages (dairy, meat, growth, fattening, reproduction) (Analysis / Comprehension). - Formulate balanced rations that ensure animal health, productivity, welfare, and product quality while minimizing environmental impact and cost (Application / Synthesis / Evaluation). - Apply laboratory techniques to design feeding programs for all ruminant species and categories, including economic evaluation of feedstuffs (Application / Analysis). - Integrate theoretical knowledge with practical feeding practices to develop comprehensive ration and feeding management programs (Synthesis / Application).
General Competences
- Decision-making - Independent work - Working in an interdisciplinary environment - Generation of new research ideas - Project design and management - Respect for the natural environment

(3) SYLLABUS

1. General Principles of Animal Nutrition 1.1. Concepts and definitions (ration and its properties) 1.2. Feeding efficiency 1.3. Feeding systems 1.4. Feeding techniques 2. Physiological Bases of Ruminant Nutrition 2.1. Symbiotic phenomena of the forestomachs
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2.2. Symbiotic phenomena of the forestomachs and utilization of the ration

2.3. Minimum and maximum use of roughages

3. Nutrition of Cattle

3.1. Nutrition of dairy cows

3.2. Nutrition of replacement heifers

3.3. Nutrition of beef cows

3.4. Nutrition of bulls

4. Nutrition of Growing and Fattening Ruminants

4.1. Growing ruminants (calves and lambs/kids)

4.2. Nutrition after weaning

4.3. Fattening of cattle

5. Nutrition of Sheep and Goats

5.1. Introduction

5.2. Physiological bases

5.3. Nutrition of sheep

5.4. Nutrition of goats

5.5. Nutrition of male animals (rams and bucks)

5.6. Nutrition of lambs and kids

5.7. Metabolic diseases of sheep and goats

5.8. Metabolic diseases of lambs and kids

6. Organic Farming of Ruminants

6.1. General principles

6.2. Operational rules of organic farms

6.3. Quality of organic products

6.4. Organic ruminant farming in Greece

7. Effect of Nutrition on Reproduction

7.1. Introduction

7.2. Reproductive function of dairy cows

7.3. Reproductive function of beef cows

7.4. Reproductive function of heifers

7.5. Reproductive function of sheep and goats

7.6. Fetal programming

7.7. Puberty of replacement animals

7.8. Reproductive function of male animals

8. Nutrition and Quality of Livestock Products

8.1. Introduction

8.2. Definition of quality

8.3. Milk

8.4. Meat

9. Nutrition and Welfare

9.1. Introduction

9.2. Definition of animal welfare

9.3. Basic principles of freedom and care of farm animals

9.4. Relationship between nutrition and welfare

9.5. Welfare and quality of animal products

Appendix

Nutritional requirements of dairy cows

Nutritional requirements of growing and fattening calves

Nutritional requirements of sheep and goats

Nutritional requirements of lambs and kids

Water requirements of ruminants

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	In the classroom	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Support of the Learning Process through the e-class electronic platform	
TEACHING METHODS	Activity	Semester workload
	Lectures	52
	Laboratory exercises	26

	Individual study	47
	Course total (25 h of workload per ECTS)	125
STUDENT PERFORMANCE EVALUATION	The assessment of both the lecture and the laboratory components is conducted 100% through the final written examination.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested Bibliography:

1. *Nutrition of Ruminant Animals*, G. Zervas, Stamoulis Publications, 2013
2. *Formulation of Rations for Farm Animals*, G. Zervas, Stamoulis Publications, 2007
3. *Animal Nutrition*, McDonald, P., Edwards, R.A., Greenhalgh, J.F.D., and Morgan, C.A., 2002. Prentice Hall, Pearson Education Limited, ISBN 0 582 41906 9

- Related Scientific Journals: