



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Microbial Ecosystem in Ruminant Nutrition							
Course Code		VHB626		Coure Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	147 (<i>Hours</i>)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Raising experts knowing scientific and theoretical informations about rumen microbiology and fermentation. Teaching information about rumen fermentation and microbiology to candidates will work in rumen microbiology industry.							
Course Content		Digestion system anatomy and physiology in ruminants. Relationship between rumen health and animal health. Nutrient metabolism and digestion in ruminants. Effects of feeds and their quality on animal performance. Relationship between feed additives and rumen health.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	28
Final Examination	1	60
Assignment	5	12

Recommended or Required Reading

1	VanSoest, P.J. (1994). Nutritional Ecology of the Ruminant. Cornell University Press. London.
2	Tsuda, T., Sasaki, Y., Kawashima, R. (1991). Physiological Aspects of Digestion and Metabolism in Ruminants, Academic Press, San Diego, ABD.
3	Preston, T.R. and Leng R.A. (1984). Matching ruminant production systems with available resources in the tropics and subtropics. Penambul Books. Australia.
4	Cheeke, P.R. (1999). Applied Animal Nutrition: Feeds and Feeding. Prentice Hall International, USA.

Week	Weekly Detailed Course Contents	
1	Theoretical	Rumen, reticulum, omasum and abomasums activities and their functions.
2	Theoretical	Digestion, absorption and buffering capacity in ruminants.
3	Theoretical	Carbohydrate metabolism in ruminants.
4	Theoretical	Lipid metabolism in ruminants
5	Theoretical	Protein metabolism in ruminants
6	Theoretical	Classification of rumen microorganisms and their functions.
7	Theoretical	Effects of rumen microorganism counts on rumen health and animal performance.
8	Intermediate Exam	Midterm exam
9	Theoretical	Rumination and role of saliva in rumination
10	Theoretical	Effects of feed sources on rumen health.
11	Theoretical	Effects of high and low quality forages on nutrient digestibility and absorption in rumen.
12	Theoretical	Importance of ADF and NDF ratios in ruminant rations.
13	Theoretical	Effects of feed additives on rumen health and animal performance.
14	Theoretical	General subject repetition. Giving homework assignment
15	Theoretical	Homework presentation.
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Assignment	5	4	1	25
Reading	14	0	5	70



Midterm Examination	1	8	2	10
Final Examination	1	12	2	14
Total Workload (Hours)				147
[Total Workload (Hours) / 25*] = ECTS				6

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Gaining updated practical information about rumen microbiology and fermentation.
2	Gaining sufficient information about microorganisms, classification of rumen microorganisms, activation, fermentation and nutrient (carbohydrate, fat, protein) digestion in rumen.
3	Digestion, absorption and buffering capacity in ruminants.
4	Rumination and role of saliva in rumination
5	The effect of ecosystem on animal health

Programme Outcomes (Animal Nutrition and Nutritional Diseases (Veterinary Medicine) Doctorate)

1	Knows information about importance of forage and concentrates in basic animal nutrition for protecting animal health in scientific and technological animal production.
2	Have ability to formulate economical and full-satisfactory rations with considering product quality and health. May inform animal producers about practical/appropriate feeding methods.
3	Can adapt to recent scientific and technological developments in animal nutrition easier and produce proper strategies against to problems on this field.
4	Knows the properties of feeds used in proper and economical rations formulated due to needs of animal species.
5	Can give information to animal producers about properties of common feedstuffs used in Turkey
6	Knows organoleptic, physical diagnostic and chemical analysis methods used in determining feed quality.
7	Have information about processing and the effects of processing on animal yield.
8	Can identify the term "feed hygiene" and have information about the usage availability of contaminated feedstuffs.
9	Can apply the informations related to feed additives in a proper way.
10	Understands the results and factors decreasing production.
11	Knows the nutrition related diseases and their solution recommendations which may be applied in feeding or formulating feeds for preventing nutritonal diseases.
12	Knows about the availability level of feedstuffs after consumed and can perform digestibility trials.
13	Knows the definition of stress, stress sources and effects on health and production level of animals.
14	Have sufficient information on classification, activation and fermentation of rumen microorganisms plus carbohydrate, lipid and protein digestibility.
15	Knows the factors effecting feed intake and negative factors in feedstuffs and prevention of them.
16	Comments on feeding behaviours and related yield parameters.
17	Have information on basic terms related to feed legislation, feeds used in animal nutrition and their legal regulations.
18	Have information about biotechnological research conducted on feeds and animal nutrition.
19	Knows the effects of nutrition on food quality, fertility, immunity and parasite enfestations.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2
P3	5	
P12		5
P14	5	5

