



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Biotechnology in Animal Nutrition							
Course Code		VHB635		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	4	Workload	96 (Hours)	Theory	1	Practice	0	Laboratory	0
Objectives of the Course		Raising experts knowing about biotechnological studies for developing animal production and production potential with improved nutrition.							
Course Content		Giving information about biotechnological studies for developing animal performance.							
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	30
Final Examination	1	60
Assignment	4	10

Recommended or Required Reading

1	Bonneau, M., Laarveld, B. (1999) Biotechnology in animal nutrition, physiology and health, Livestock Production Science, 59 (2-3): 223-241.
2	Coşkun, B., Şeker, E., İnal, F. (2000) Yemler ve Teknolojisi, Selçuk Üniversitesi Veteriner Fakültesi Yayın Ünitesi, Konya.
3	Ergün, A., Tuncer, Ş.D., Çolpan, İ., Yalçın, S., Yıldız, G., Küçükarsan, M.K., Küçükarsan, S., Şehu, A. (2004) Yemler, Yem Hijyeni ve Teknolojisi, Pozitif Matbaacılık, Ankara.
4	Kellerns, R.O., Church, D.C. (2002) Livestock Feeds and Feeding, Prentice Hall, New Jersey.
5	Wiseman, J., Cole, D.J.A. (1990) Feedstuff Evaluation, Cambridge University Press, Great Britain.

Week	Weekly Detailed Course Contents	
2	Theoretical	Giving information about recent developments in biotechnology used for increasing feed production.
3	Theoretical	Giving information about recent studies in biotechnology used for increasing nutritive value of feeds.
4	Theoretical	Giving information about recent studies in biotechnology used for increasing nutritive value of conserved forages.
5	Theoretical	Giving information about recent studies in biotechnology used for increasing bioavailability of complex carbohydrates found in low quality forages.
6	Theoretical	Giving information about biotechnological products used for increasing feed conversion ratio: 1. Amino acids.
7	Theoretical	Giving information about biotechnological products used for increasing feed conversion ratio: 1. Enzymes.
8	Intermediate Exam	Midterm exam
9	Theoretical	Giving information about biotechnological products used for increasing feed conversion ratio: 1. Use of prebiotics, probiotics and yeasts.
10	Theoretical	Feed sources originated from microbiological processes.
11	Theoretical	Single cell proteins.
12	Theoretical	Developing laboratory methods in animal nutrition.
13	Theoretical	Genetically modified organisms (transgenic manipulation of microorganisms in intestine rumen and their effects on animal health).
14	Theoretical	Use of genetically modified organisms and recombinant somatotropin (ST) in animal nutrition.
15	Theoretical	Home assignment presentation.
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14



Assignment	5	0	10	50
Midterm Examination	1	13	1	14
Final Examination	1	17	1	18
Total Workload (Hours)				96
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Biotechnological studies on feeds and feeding. Biotechnological studies for enhancing animal production and product quality.
2	Having information about biotechnological studies on feeds and feeding.
3	Knowing that biotechnological studies increase animal productivity and product quality.
4	Developing laboratory methods in animal nutrition.
5	Feed sources originated from microbiological processes.

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	L3
P18	5	5	5
P19			5

