



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Feed Additives							
Course Code		VHB602		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	5	Workload	126 (<i>Hours</i>)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Term of feed additives and teaching feed additives used under this term. Teaching the goals of using feed additives, usage conditions of feed additives. Teaching the importance of usage of feed additive in modern/intensive animal production. Explaining the economical relations between feed additive cost in the total cost of feeding and income of enhanced production.							
Course Content		Term of feed additives and teaching feed additives used under this term. Teaching the goals of using feed additives, usage conditions of feed additives. Teaching the importance of usage of feed additive in modern/intensive animal production. Explaining the economical relations between feed additive cost in the total cost of feeding and income of enhanced production.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)		Prof. Ahmet Gökhan ÖNOL							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	28
Final Examination	1	60
Assignment	10	12

Recommended or Required Reading

1	Nir, İ., Şenköylü, N. (2000). Kanatlılar için Sindirimi Destekleyen Yem Katkı Maddeleri, Trakya Üniversitesi, Tekirdağ Ziraat Fakültesi, Tekirdağ.
2	Çakmakçı, s., Çelik, İ. (2000). Gıda Katkı Maddeleri, Atatürk Üniversitesi, Ziraat Fakültesi Ofset Tesisi, Erzurum.
3	Perry, T.W. Cullison, A.E., Lowrey R.S. (2003). Feeds and Feeding. Pearson Education Ltd. New Jersey.
4	Rehm, H.J., Reed, G. (1995). Biotechnology: Enzymes, Biomass, Food and Feed. Volume 9, VCH, Weinheim, New York, Basel, Cambridge, Tokyo.

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition, properties and classification of feed additives.
	Practice	General view to feed additives in Turkey
2	Theoretical	Vitamins, water and fat soluble vitamins, minerals, animal originated minerals, natural minerals, synthetic minerals, chelates.
	Practice	Production technology and production steps of feed additives (video presentation)
3	Theoretical	Amino acids, by pass proteins, by pass fats, energy providers.
	Practice	Spot tests for minerals (copper, magnesium phosphate tests).
4	Theoretical	Substances used for feed production and enhancement in storage life (antifungals and adsorbent substances)
	Practice	Spot tests for minerals (sulphate, sulphur and salt tests)
5	Theoretical	Substances used for feed production and enhancement in storage life (antioxidants, pellet binders, emulgators)
	Practice	Determination of pellet quality
6	Theoretical	Performance enhancers – Feed palatability enhancers (flavour and aromatics) – Substances effecting digestibility (enzymes)
	Practice	Presenting samples of feed additives
7	Theoretical	Performance enhancers - Substances effecting digestibility (prebiotics, probiotics, organic acids)
	Practice	Preparation of emulsion with supplementing emulgator
8	Practice	Supplementation of feed additives to feeds and its considerations
	Intermediate Exam	Midterm
9	Theoretical	Performance enhancers - Substances effecting digestibility (buffers, isoacids, substances effecting ion transport, ionophors, methane inhibitors, bloat preventers, saliva enhancers, defaunators, grids)
	Practice	Quick tests for vitamins (vitamin A, riboflavin)



10	Theoretical	Performance enhancers – Substances altering animal metabolism (hormones and substances effecting carcass composition)
	Practice	Quick tests (Ascorbic acid and vitamin K tests)
11	Theoretical	Performance enhancers –Growth promoters (Antimicrobials, saponines)
	Practice	Demonstrating critical points in packaging and storing feed additives
12	Theoretical	Substances effecting animal health (drugs, insecticides, immunomodulators)
	Practice	Technical trip to feed additive operation
13	Theoretical	Substances enhancing marketing power of animal products.
	Practice	Additives used in foods
14	Theoretical	Other feed additives/ legal regularization
	Practice	Oral conversations with a veterinarian working in feed additive industry (Outcome-income relation in usage of feed additives)
15	Theoretical	Considerations in use of feed additives in concentrates
	Practice	General evaluation and repetition

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	15	0	0	0
Assignment	4	2	1	12
Reading	9	0	6	54
Midterm Examination	1	12	2	14
Final Examination	1	16	2	18
Total Workload (Hours)				126
[Total Workload (Hours) / 25*] = ECTS				5

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Knowing the meaning of feed additive term and its content.
2	Understanding the importance of feed additives in animal production.
3	Having information about the efficacy, goal and proper usage of common feed additives used in animal nutrition
4	Determination of pellet quality
5	Substances enhancing marketing power of animal products.

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 infestations.

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

	L1	L2	L3
P1		5	
P3	5	5	5
P9	5	5	5

