AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Ration Formulation								
Course Code	VHB606		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	10	Workload	254 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	Raising experts knowing principles and methods of ration formulation for livestock. Teaching the amounts of feedstuffs used in rations of poultry and ruminants. Teaching the ration formulation for different animal species.								
Course Content	Definition and basic principles of ration. Factors affecting ration formulation. Methods of ration formulation. Standarts for animal nutrition. Ration formulation according to animal species and husbandry.								
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	10	12

Recommended or Required Reading	
1	Ergün, A., Tuncer, Ş.D., Çolpan, İ., Yalçın, S., Yıldız, G., Küçükersan, M.K., Küçükersan, S., Şehu, A. (2008) Hayvan Besleme ve Beslenme Hastalıkları, Pozitif Matbaacılık, Ankara.
2	Kılıç, A. (1988). Yemler ve Hayvan Besleme, Bilgehan Basımevi, İzmir.
3	Aksoy, A., Macit M., Karaoğlu, M. (2000). Hayvan Besleme, Atatürk Üniversitesi Ziraat Fakültesi Yayınları, Erzurum.
4	Sarı, M., Çakmak, MN. (1996). Balık Besleme, Fırat Üniversitesi Matbaası, Elazığ.
5	Arıtürk, E., Kara, S. (1968). Et ve Süt Sığırcılığı Besleme İlkeleri ve Rasyonları, Lalahan Zootekni Araştırma Enstitüsü Yayın No: 23.
6	MASTER (1989). Complete Ration Formulation Program, Animal Science Department of Agriculture Division of Oklahoma State University, Oklahoma.

Week	Weekly Detailed Course Contents	
1	Theoretical	Selection of feeds
	Practice	Introduction of feeds
2	Theoretical	Determination of nutritional requirements.
	Practice	Introduction of tables used for calculation of nutritional requirements of animals and their usage in ration formulation.
3	Theoretical	Determination of nutritional requirements.
	Practice	Introduction of tables used for calculation of nutritional requirements of animals and their usage in ration formulation.
4	Theoretical	Methods of ration formulation (Pearsons' Square method).
	Practice	Ration formulation for different animal species according to Pearsons' Square method.
5	Theoretical	Methods of ration formulation (double unknown equation method).
	Practice	Ration formulation for different animal species according to double unknown equation method.
6	Theoretical	Methods of ration formulation (prediction method)
	Practice	Ration formulation for different animal species according to prediction method.
7	Theoretical	Methods of ration formulation (prediction method)
	Practice	Ration formulation for different animal species according to prediction method.
8	Practice	Literature search on a specific area of subject.
	Intermediate Exam	Midterm exam
9	Theoretical	Ration formulation for dairy cattle.
	Practice	Ration formulation with different feedstuffs for dairy cattle with different production levels and body weight.

10	Theoretical	Ration formulation for dairy cattle.
	Practice	Ration formulation with different feedstuffs for dairy cattle with different production levels and body weight.
11	Theoretical	Ration formulation for beef cattle.
	Practice	Ration formulation with different feedstuffs for beef cattle with different production levels and body weight.
12	Theoretical	Ration formulation for sheep and goats.
	Practice	Ration formulation with different feedstuffs for sheep and goats with different production levels and body weight.
13	Theoretical	Ration formulation for laying hens.
	Practice	Ration formulation for laying hens with different rearing period.
14	Theoretical	Ration formulation for broiler chickens.
	Practice	Ration formulation for broiler chickens with different rearing period.
15	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	15	0	2	30
Assignment	10	7	1	80
Reading	14	0	6	84
Midterm Examination	1	12	2	14
Final Examination	1	16	2	18
			Total Workload (Hours)	254
			[Total Workload (Hours) / 25*] = **ECTS**	10

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	Knows the meaning of ration, balanced ration and nutritional standards.
2	Gives information about the energy and nutrient requirements of animal species in different ways.
3	Knows animal, feed and economy related factors affecting ration formulation.
4	Calculates energy and nutrient requirements of animals.
5	Knows the usage limits of feedstuffs and feed additives in rations.
6	Knows methods of ration formulation.

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 nutiritonal 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 preventation 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	L4	L5	L6
P1	5					
P2		5	5	5		5
P3	5	5	5	5		5
P4		5	5		5	
P5					5	
P9					5	