



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Basic Principles of Fish Nutrition							
Course Code		VHB642		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	7	Workload	173 ( <i>Hours</i> )	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Introducing anatomical and physiological characteristics of digestive system in fish. Introducing housing conditions and feeds of fish. Teaching nutritional requirements and breeding methods. Reaching ability of applying gained knowledge in fish feeding. Communication with fish producers. Correcting mistakes done in fish production. Able to make literature search in this subject. Having knowledge sufficient for establishing own fish farm.							
Course Content		Anatomical and physiological characteristics of digestive system in fish. Nutritional requirements. Feeds used in fish nutrition. Ration formulations according to different productivity periods. Practical and proper feeding systems in fish nutrition.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study					
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	Sarı, M., Çakmak, M.N. (1996) Balık Besleme, Fırat Üniversitesi Matbaası, Elazığ.
2	National Research Council (1993) Nutrient Requirements of Fish, National Academy Press Washington, DC.
3	Kellerns, R.O., Church, D.C. (2002) Livestock Feeds and Feeding, Prentice Hall, New Jersey.
4	McDonald, P., Edwards, R.A., Greenhalgh, J.F.D., Morgan, C.A. (2002) Animal Nutrition, Longman Scientific & Technical, England.
5	Pond, W.G., Church, D.C., Pond, K.R., Schoknecht, P.A. (2004) Basic Animal Nutrition and Feeding, John Wiley & Sons, New York.
6	Tisch, D. (2005) Animal Feeds, Feeding and Nutrition and Ration Evaluation, Thomson Learning.

Week	Weekly Detailed Course Contents	
1	Theoretical	Importance of fish feeding in World and Turkey.
2	Theoretical	Digestive system of fish. Anatomic and physiological differences between other animal species.
3	Theoretical	Fish breeds and their productive properties. Nutritional requirements of fish.
4	Theoretical	Energy and protein requirements of fish.
5	Theoretical	Carbohydrate, fat, fatty acids, vitamin and mineral requirements of fishes.
6	Theoretical	Feeds used in fish feeding.
7	Intermediate Exam	Midterm exam
8	Theoretical	Feeds used in fish feeding. Live, wet, semi wet and dry feeds used in fish nutrition.
9	Theoretical	Feed forms used in fish feeding (starter, fry, fingerling, grower, broodstock fish, product quality feeds).
10	Theoretical	Critical points considered in fish feeding. Factors effecting feed intake. Appetite and fill. Feeding frequency and feed amounts.
11	Theoretical	Feeding methods (manual and automatic).
12	Theoretical	Fish nutrition, trout, tilapia and bass nutrition.
13	Theoretical	Feed additives used in fish nutrition.
14	Theoretical	Ration formulations for fishes.
15	Theoretical	Nutritional diseases in fish.



16	Final Exam	Final exam
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**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Assignment	7	0	7	49
Reading	14	0	5	70
Midterm Examination	1	10	2	12
Final Examination	1	12	2	14
Total Workload (Hours)				173
[Total Workload (Hours) / 25*] = ECTS				7

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	Having knowledge about anatomical and physiological characteristics of digestive system in fish.
2	Knows housing conditions and feeds of fish. Teaching nutritional requirements and breeding methods.
3	Ration formulation for fish with different age. Communication with fish producers. Correcting mistakes done in fish production.
4	May give information about practical and proper feeding systems in fish nutrition. Have knowledge sufficient for establishing his/her fish farm.
5	Feeds used in fish feeding.

**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
P1	5	5
P2	5	5
P3	3	3
P4	4	3
P5	3	2
P6		2
P7		3



P17	3	
P18	2	
P19	4	

