AQUATIC ANIMAL MICROBIOLOGY

1	Course Title:	AQUATIC ANIMAL MICROBIOLOGY
2	Course Code:	VSSH6001
3	Type of Course:	Compulsory
4	Level of Course:	Third Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. Soner Altun
15	Course Lecturers:	-
16	Contact information of the Course Coordinator:	Prof. Dr. Soner ALTUN Veteriner / Klinik Öncesi Bilimler / Su Ürünleri Hastalıkları
17	Website:	http://veteriner.uludag.edu.tr/index.html
18	Objective of the Course:	To give informations about the historical development of microbiology in aquatic ecosystems and aquatic animals and its effect on aquatic animal health
19	Contribution of the Course to Professional Development:	To give informations about the emergence of microbiology in aquatic animals and the currently applied scientific methods,.
20	Learning Outcomes:	
	1	To learn the history of microbiology in aquatic animals and the currently applied scientific methods.
	2	Gains knowledge about the contribution of Aquatic Microbiology to aquatic animal health
	3	Have information about the diagnosis and treatment of microorganisms seen in aquatic animals
	4	how to describe lesions of these diseases and prepare oral and written reports
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	The nature of the aquatic environment	By introducing natural water resources, information will be given about the differences of fresh water (spring, artesian, river, lake, dam), brackish water and marine environments.
2	The nature of the aquatic environment	By introducing natural water resources, information will be given about the differences of fresh water (spring, artesian, river, lake, dam), brackish water and marine environments.

3	Microbiology of the water source	Information will be given about physical and chemical factors affecting the presence of microorganisms in the aquatic environment, temperature, hydrostatic pressure, light, salinity, turbidity, pH, concentrations of inorganic and organic components.
4	Microbiology of the water source	Information will be given about physical and chemical factors affecting the presence of microorganisms in the aquatic environment, temperature, hydrostatic pressure, light, salinity, turbidity, pH, concentrations of inorganic and organic components.
5	Microbial flora of water and sediment in aquaculture systems	Information will be given about the principles of selection, collection and sending of ill fish material to the laboratory.
6	Microbial flora of water and sediment in aquaculture systems	Information will be given about the principles of selection, collection and sending of ill fish material to the laboratory.
7	Importance of water source in terms of public health	Information will be given on how to use microbiological techniques to isolate microorganisms, microorganisms encountered in aquatic animals and the diseases they cause.
8	Importance of water source in terms of public health	Information will be given on how to use microbiological techniques to isolate microorganisms, microorganisms encountered in aquatic animals and the diseases they cause.
9	Protection of water quality in aquaculture systems	Microorganisms that are common in lake, river, well water and marine environments will be isolated in laboratories.
10	Protection of water quality in aquaculture systems	Microorganisms that are common in lake, river, well water and marine environments will be isolated in laboratories.
11	Use of wastewater in fish farming in agricultural irrigation	Isolation of microorganisms commonly found in the skin, gill and intestinal microbiota of freshwater and marine fish
12	Effects of climate change on water management and microbiota	Student presentations
13	Effects of climate change on water management and microbiota	Student presentations

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	6.00	84.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	3.00	3.00
Total Work Load			143.00
Total work load/ 30 hr			4.77
ECTS Credit of the Course			5.00

Materials:	1. Woo, P. T. K., Leatherland, J. F., & Bruno, D. W. (2006) Fish diseases and disorders (Vol. 3). Guelph-Canada: ed. 2. Buller, N. B. (2014). Bacteria and fungi from fish and other aquatic animals: a practical identification manual. 3. Pike A.W., Lewis J.W.. Parasitic Diseases of Fish, ' Samara Publishing Ltd., 1994 Academic Press:368 5. Roberts R.J. : Fish Pathology, W.B. Saunders Harcourt 6. Austin, B. and Austin, D. A (2016). Bacterial fish pathogens: disease of farmed and wild fish sixth edition, Springer 723 p. 7. Woo, P. T., & Gregory, D. W. B. (Eds.). (2014). Diseases and disorders of finfish in cage culture. CABI. 354 p. 8. Smith, S. A. (Ed.). (2019). Fish Diseases and Medicine. CRC Press. 328 p.
23	Assesment

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	0	0.00
Quiz	0	0.00

Home work-project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade		0.00
Contribution of Final Exam to Success Grade		100.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		In order to achieve learning outcomes, students exams will be conducted in the form of tests, classical written or oral.

24 ECTS / WORK LOAD TABLE

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	5	4	4	3	4	2	1	3	3	4	2	0	0	0	0
ÖK2	5	4	3	4	3	2	3	2	5	2	4	0	0	0	0	0
ÖK3	4	5	3	4	5	2	5	4	4	2	4	0	0	0	0	0
ÖK4	4	4	3	4	3	5	4	5	4	4	2	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**