Module title:	Fish Diseases	**ECTS**	**1**
Polish translation:	Choroby ryb		
Course:	**Veterinary Medicine**		

Module language: English		Stage: JM-FVM	
Form of studies: ■ intramural ☐ extramural	Type of module: ☐ basic X mandatory X directional ☐ elective	Semester: ……08…..	☐ winter semester X summer semester
Academic year:	**Intake 2021/2022**	Catalog number:	**FVM-V-JMSS-S08-D23_20**

Module coordinator:	**Prof. dr hab. Andrzej Siwicki**
Teachers responsible for the module:	Academic teachers of the Inland Fisheries Institute in Olsztyn; the Department of Fish Pathology and Immunology in Żabieniec near Warsaw
Objectives of the module:	The student learns about basic issues of fish anatomy, immunology, and correct diagnosis of fish diseases based on clinical and pathological examinations and laboratory tests. During the course, a student should acquire the theoretical knowledge and practical skills necessary to diagnose and treat diseases in fish. The Student acquires both basic and detailed information and knowledge in the field of fish production based on traditional and intensive culture (aquaculture). The lectures are present: viral diseases (3 h), bacterial diseases (3 h), fungal diseases (2 h) and major parasites in farmed fish (3 h). Also, the influence of diets, xenobiotics, and other pollutants on fish conditions and protection against diseases were presented (4 h).
Teaching forms, number of hours:	a) Lectures; hours 15; b) Laboratory classes; hours 10;
Teaching methods:	Lectures (multimedia presentations, pictures, films) The laboratory (necropsy, workshop) The detailed schedule will be defined by the course coordinator at the beginning of the semester.
Formal prerequisites and initial requirements:	Passed exams in: Animal Anatomy, Animal Physiology, Immunology, histopathology and Embryology, Pharmacology, Fish culture, and aquaculture, Pathomorphology 3

Learning effects		Course outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*
Knowledge:	1	Student has a basic knowledge of anatomy and topography of different species of fish	A.W.1, A.W.2, B.W.3	3
	2	Student has a basic knowledge of immunology and the prevention of fish diseases	A.W.10, A.W.13, A.W.15	3
	3	Student knows of treatment fish diseases	A.W.17, B.W.4, B.U.13	3
	4	Student has knowledge about major diseases in fish and principles of disease prevention	A.W.10, A.W.13, B.W.3	3
Skills:	1	Student is able to perform clinical examination and basic laboratory tests in fish	A.U.6, A.U.8, B.W.5, B.U.1, B.U.3, B.U.11	3
	2	Student can perform necropsy of different species of fish and can interpret of results	A.U.6, A.U.8, B.W.4	3
	3	Student is able to diagnose the most common contagious and metabolic diseases in fish	A.U.6, A.U.8, A.U.10	3

	4	Students can take right samples for laboratory tests and interpret the results of these tests	A.U.2, B.W.6, B.U.6	3
Competences:	1	Student collaborates with specialists for the protection of public health and healthy food.	KS.11	3
	2	Student takes responsibility for decisions concerning human and animal health and environment.	KS.1	3
Objectives of the module required to obtain learning effects:		The student learns about basic issues of fish anatomy, immunology, and correct diagnosis of fish diseases based on clinical and pathological examinations, and laboratory tests. During the course a student should acquire the theoretical knowledge and practical skills necessary to diagnose and treat diseases in fish. The student acquires both basic and detailed information and knowledge in the field of fish production based on traditional and intensive culture (aquaculture).		
Assessment methods:		Short written tests on each class, practical tests (necropsy technique). One written test will have 20 questions (only one positive answer). The second data of the exam will be oral 2 weeks after the first. In case of unforeseen, unusual circumstances, mandatory remote teaching and remote assessment methods might be adopted.		
Detail description of assessment methods; Formal documentation of learning outcome:		eHMS entry. Records collected in the course portfolio i.e. individual records of student results, presence lists, database of oral and written questions, written assessments of the students.		
Elements impelling final grade:		Laboratory: 1. Evaluation of tests (140p) - 93% 2. Evaluation of necropsy techniques and knowledge about anatomy, physiology and pathology of fish (10p) - 7% Lectures: List of attendance and test questions (60p) - 100%		
Teaching base:		Faculty of Veterinary Medicine, necropsy room of Division of Animal Pathomorphology; Department of Fish Pathology and Immunology IFI Żabieniec; Fish farm (Experimental Station of Inland Fisheries Institute Żabieniec);		
Mandatory and supportive materials : 1. Noga E. I. : Fish Disease: Diagnosis and Treatment. Wiley – Blackwell, 2010. 2. Roberst R. J. : Fish Pathology. Wiley – Blackwell, 2012. 3. Austin B., Austin D.A.: Bacterial Fish Pathogens: Disease of Farmed and Wild Fish. Springer, 2012. 4. Whitman K.A.: Bacteriology Manual Techniques and Procedures of Finfish and Shellfish. Iowa State Press, Blackwell Publishing Company, 2004. 5. Stolen J., Anderson D.P., Van Muiswinkel W.B.: Fish Immunology. Elsevier, 1986. 6. Bruno D.W., Poppe T.T.: A Colour Atlas of Salmonid Diseases. Academic Press, 1996. 7. Lim C.E., Sessa D.J.: Nutrition and Utilization Technology in Aquaculture. AOCS Press, Illinois, USA, 1995. 8. Bernoth E.M., Ellis A.E., Midtlyng P.J., Olivier G., Smith P.: Furunculosis – Multidisciplinary Fish Disease Research. Academic Press, 1997. Relevant scientific publications including those of the module coordinator.				
ANNOTATIONS				

* 3 – complete and detailed, 2 – moderate, 1 – basic.

Quantitative summary of the module:

Estimated number of work hours per student (contact and self-study) essential to achieve presumed learning outcomes of the module - base for quantifying ECTS:	**…25……. h**
Total ECTS points, accumulated by students during contact learning:	**……1…. ECTS**