Module title:	Safety of food of animal origin (2)	ECTS	4
Polish translation:	Bezpieczeństwo żywności pochodzenia zwierzęcego (2)		
Course:	**Veterinary Medicine**		

Module language: English		Stage: JM-FVM	
Form of studies: ■ intramural ☐ extramural	Type of module: ☐ basic ■ mandatory ■ directional ☐ elective	Semester: 09	☐ winter semester ■ summer semester
Intake:	**2020/2021**	Catalogue number:	**FVM-V-JMSS-09W-D08_20**

Module coordinator:	**Dr hab. Agnieszka Jackowska-Tracz**
Teachers responsible for the module:	**Academic teachers of the Institute of Veterinary Medicine, Department of Food Hygiene and Public Health Protection; PhD students by the internal legal acts; Other specialists, if needed and possible**
Unit responsible for the module:	**IVM, Department of Food Hygiene and Public Health Protection**
Faculty in charge:	**Faculty of Veterinary Medicine**
Objectives of the module:	The aim of the education is to prepare students to work as official veterinarians, private veterinarians cooperating with processing plants, and/or specialists in other governmental and non-governmental organisations in the fields of hygiene and safety of hermetically sealed food, aquatic food, poultry, eggs and egg products, and cold storage safety. **The content of training exercises:** **Laboratory classes (27 h)** The training content of the laboratory classes is divided into three sections: I. <u>Hygiene and safety of food of animal origin in hermetically sealed containers</u>: Production of pasteurised and sterilised canned food - technological aspects and critical control points. Basics of thermobacteriology. Microbiology of canned food. Laboratory testing of sterilized canned food (organoleptic and microbiological tests). Analysis of official checklists. Microbiological criteria for canned food of animal origin (9 h) II. <u>Hygiene and safety of seafood production and cold storage</u>: Processing of fish - technological aspects and critical control points. Laboratory testing of cold marinades. Microbiology of fish and fish products. Microbiological criteria for seafood. Fisheries products - analysis of official checklists. Health status assessment of bivalve molluscs. Low-temperature storage of food of animal origin (9 h) III. <u>Safety and hygiene of poultry meat and eggs</u>: Processing of poultry and eggs - technological aspects and critical control points. Microbiology of eggs and egg products. Microbiological criteria for poultry and egg products. Laboratory testing of eggs and egg products (9 h). **Field exercises (3 h)**; if possible, field classes in a cold store; the student learns the specifics of the official veterinarian's work in a cold store; observes the activities of quality department employees undertaken under procedures based on HACCP principles; The content of the lectures supplements the content of the laboratory classes. **The content of the lectures (15 h):** • The idea of food safety criterion and process hygiene criterion • *L. monocytogenes* as a food safety criterion • Coagulase-positive staphylococci as a process hygiene criterion • Histamine as a food safety criterion • Private systems for ensuring food safety in establishments supervised by the Veterinary Inspection Service • Veterinary Inspection; • Food defense • Alternative methods of food preservation - high hydrostatic pressure, ionising radiation • Washing, disinfection, disinsecting and deratization in food plants
Teaching forms, number of hours:	a) Lectures; hours 15; b) Laboratory classes; hours 27; c) Field exercises; hours 3; The implementation of field exercises depends on external stakeholders. When the realization of these exercises is not possible (e.g., lack of consent from food processing plants, District Veterinarian, epidemics, etc.), the classes will be realized as laboratory classes.
Teaching methods:	**LECTURES**: These are conducted using audiovisual means (authorial multimedia presentations, video).

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<tr><td></td><td colspan="3">LABORATORY CLASSES:
In the theoretical part, authorial multimedia presentations and films are used.
In the practical part of the classes, students:
- solve tasks in the field of thermobacteriology (calculation of D, z, P, F values) - interpretation of results in the forum;
- carry out laboratory tests (organoleptic and microbiological) of food in hermetically sealed containers, cold marinades, and pasteurised egg mass; assess freshness of table eggs; carry out health assessment of bivalve molluscs (mussels); they record their own observations and test results in the cards; they analyse and interpret the results in groups – discussion;
In 2-person groups, they identify process hygiene and food safety criteria for the tested hermetically sealed food, cold marinades, and pasteurised egg mass, which is discussed in the forum.

FIELD EXERCISES (mandatory)—The student learns the practical aspects of supervising the processing of food of animal origin (cold store). The exercises include a tour of the plant, interviews with plant employees, discussions with a representative of the plant quality department, discussions with the official veterinarian (ULW) and/or district veterinarian (PLW), observation of cooperation between the supervised entity and ULW/PLW, and discussion.

Consultation: 1h every other week.

The course coordinator will define a detailed schedule at the beginning of the semester.
At the beginning of the semester, the course coordinator will define the detailed organisation of consultations.</td></tr>
<tr><td>Formal prerequisites and initial requirements:</td><td colspan="3">Medical certificate for sanitary and epidemiological purposes;
Animal anatomy, Veterinary microbiology, Response to public health-related disasters, Meat hygiene, Farm animal diseases, Safety of animal origin foods (1)</td></tr>
<tr><td>Learning outcomes:</td><td>Knowledge:
K2 - knows and understands the technological aspects of the production of hermetically sealed food, food of aquatic origin, eggs and egg products, as well as microbiological, physical and chemical hazards occurring in its production; knows and understands legal regulations referring to the above products
K3 - knows and understands the principles of implementing and maintaining pre-requisite programs and procedures based on HACCP principles in a cold storage facility.
K4 - knows and understands the principles of organoleptic evaluation and microbiological testing of hermetically sealed food, food of aquatic origin, eggs and egg products; knows how to interpret the results of these tests
K5 - knows and understands basic concepts of prognostic microbiology;
W6 - knows and understands alternative methods of food preservation; knows the advantages and disadvantages of using particular methods
W7 - knows and understands the tasks of the official veterinarian in hermetically sealed food, food of aquatic origin, egg and egg products processing plants
W8 - knows and understands the basics of washing, disinfection and rodent control in food processing plants
W 9 - knows and understands the food packaging safety issues</td><td>Skills:
S1 – knows how to implement the principles of public health protection through appropriate veterinary supervision over the processing of hermetically sealed food, food of aquatic origin, egg and egg products
S2 – knows how to prepare a protocol from an official control
S3 – knows how to identify the mandatory microbiological criteria for different technological groups of hermetically sealed food, food of aquatic origin and egg products
S4 – knows how to formulate conclusions relating to process hygiene and/or food safety based on studies performed
S5 – knows how to justify the decision by referring to food law
S6 – knows how to verify the correctness of implementation and maintenance of pre-requisites programs and procedures based on HACCP principles in a cold store
S7 – knows how to carry out health status assessment of bivalve molluscs
S8 – knows how to plan and carry out organoleptic assessment and microbiological testing of hermetically sealed food, food of aquatic origin and egg products; knows how to assess the freshness of table eggs; knows how to prepare a report from this testing;
S9 – knows how to communicate with veterinarians and other persons involved in supervising food production; knows how to communicate with the supervised entity in a controlled and cultural manner;</td><td>Competences:
C1 - is prepared to work as an official veterinarian or private veterinarian cooperating with processing plants in the field of hygiene and safety of hermetically sealed food, food of aquatic origin; poultry meat, eggs and egg products, and in the field of safety of storage refrigeration
C2 - is prepared to communicate and cooperate with representatives of food processing plants in the field of food production supervision
C3 - is prepared to deepen his knowledge and to analyse it critically
C4 - is ready to do his/her job ethically
C5 - shows responsibility for decisions taken
C6 - is prepared to formulate independent conclusions and opinions</td></tr>
<tr><td>Assessment methods:</td><td colspan="3">The practical effects of learning within the framework of laboratory classes are verified based on the teacher's assessment of work cards (for credit) during the exercises. The student prepares documentation - a protocol from the performed activity, which includes interpreting obtained results. The assessment considers the criterion of form and content, emphasising the correctness of interpreting the obtained results.
A credit is the basis for obtaining a confirmation of the examination in the First Day Skills Diary.

Learning outcomes, including theoretical content, are verified through:

Colloquia (max. 40 points in total): 2 tests. Each test includes 20 questions of a mixed nature (single-choice test questions and open questions). A maximum of 20 points can be awarded for one test. To pass, the student must obtain at least 60% of the points from each test. The colloquium at the first and second term shall take the same form.</td></tr>
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<tr><td></td><td>The exam (max 80 points).
Prerequisites for taking the exam:
- the student must receive a positive mark from the course in a sem. 8
- the student must obtain at least 60% of the points available for each colloquium in the current semester (sem. 9)
- the student must pass the practical skills during the exercises

The exam includes lecture material from the whole course Safety of food of animal origin (semesters 8 and 9), a test, and open-ended questions. To pass the exam, the student must obtain at least 60% of the points.

No extra assessment methods are anticipated.
In case of unforeseen, unusual circumstances, mandatory remote teaching and remote assessment methods might be adopted.</td></tr>
<tr><td>Formal documentation of learning outcomes:</td><td>eHMS entry.
Records collected in the course portfolio, i.e. individual records of student results, presence lists, database of oral and written questions, and written assessments of the students.</td></tr>
<tr><td>Elements impelling final grade:</td><td>Weights affecting the final grade:
The final grade is calculated based on the sum of points obtained from:
- exercises from sem. 9 - weighting factor 0.5 and
- final examination - weighting factor 0.5

Final points = (exercise points x 0.5) + (examination points x 0.5)

<table>
<tr><th>Activity</th><th>Maximum collected points (A)</th><th>Weighting factor (B)</th><th>Final points= A x B.</th></tr>
<tr><td>Classes</td><td>40</td><td>0,5</td><td>20</td></tr>
<tr><td>Exam</td><td>80</td><td>0,5</td><td>40</td></tr>
<tr><td colspan="3">Total Points (max.):</td><td>60</td></tr>
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% GRADE
92-100 very good 5.0
84-91 good+ 4.5
76-83 good 4.0
68-75 sufficient+ 3.5
60-67 sufficient 3.0
0-59 insufficient 2.0

In the event of an excused absence on a colloquium, the form of the colloquium does not change.</td></tr>
<tr><td>Teaching base:</td><td>Department of Food Hygiene and Public Health Protection; IVM lecture rooms; external stakeholders (food processing plants) and Analytical Centre (SGGW) if possible.</td></tr>
<tr><td colspan="2">Mandatory and supportive materials:
1. FAO: MEAT PROCESSING TECHNOLOGY FOR SMALL- TO MEDIUMSCALE PRODUCERS http://www.fao.org/3/a-ai407e.pdf
2. The legal acts indicated by the teachers during the exercises (EUR – lex, Codex Alimentarius).
3. Hui Y.H.et all Handbook of meat and meat processing, CRC Press 2012
4. Arvanitoyannis I.S. HACCP and ISO 22000 Appilications to Foods of Animal Origin, Wiley-Blackwell 2009
5. Doyle M.P. et all Food Microbiology. Fundamentals and Frontiers ASM Press 2001
6. D'Mello J.P.F. Food Safety. Contaminants and toxins. ©CAB International 2003.
7. Warriss P. D.: MEAT SCIENCE An Introductory Text. © CAB International 2000.
8. Jensen W. K.: Encyclopedia of Meat Sciences. Vol. 1- 4. © 2004 Elsevier Ltd.
9. Bibek Ray & Arun Bhunia: Fundamental food microbiology. Fourth Edition. CRC Press 2007.

Relevant scientific publications, including those of the module coordinator.</td></tr>
<tr><td colspan="2">ANNOTATIONS
During classes in the laboratory rooms the student should be dressed in a clean white coat, the outer clothing should be left in the cloakroom.</td></tr>
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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:	**100 h**
Total ECTS points, accumulated by students during contact learning:	**2 ECTS**

Learning outcomes of the module relative to the learning outcomes of the subject:

Outcome category	Learning outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*)
Knowledge -	K2 - knows and understands the technological aspects of production of hermetically sealed food, food of aquatic origin, eggs and egg products, as well as microbiological, physical and chemical hazards occurring in its production; knows and understands legal regulations referring to the above products	B.W.17 B.W.21	3 3

Knowledge -	K3 - knows and understands the principles of implementation and maintenance of pre-requisites programs and procedures based on HACCP principles in a cold storage facility	B.W.18	3
Knowledge -	K4 - knows and understands the principles of organoleptic evaluation and microbiological testing of hermetically sealed food, food of aquatic origin, eggs and egg products; knows how to interpret the results of these tests	A.W.15 B.W.6	2 3
Knowledge -	K5 - knows and understands basic concepts of prognostic microbiology;	B.W.20	3
Knowledge -	W6 - knows and understands alternative methods of food preservation; knows the advantages and disadvantages of using particular methods	B.W.20	3
Knowledge -	W7 - knows and understands the tasks of the official veterinarian in hermetically sealed food, food of aquatic origin, egg and egg products processing plants	A.W.22 B.W.16 B.W.17 B.W.21 C.W.2 C.W.3	1 3 3 3 2 1
Knowledge -	W8 - knows and understands the basics of washing, disinfection and deratisation in food processing plants	B.W.17 B.W.18	3 3
Knowledge	W 9 - knows and understands the food packaging safety issues	B.W.17 B.W.18	3 3
Skills -	S1 – knows how to implement the principles of public health protection through appropriate veterinary supervision over the processing of hermetically sealed food, food of aquatic origin, egg and egg products	A.U.16 A.U.19	1 3
Skills -	S2 – knows how to prepare a protocol from an official control	C.U.4	3
Skills -	S3 – knows how to identify the mandatory microbiological criteria for different technological groups of hermetically sealed food, food of aquatic origin and egg products	B.U.18	3
Skills -	S4 – knows how to formulate conclusions relating to process hygiene and/or food safety on the basis of studies performed	B.U.18	3
Skills -	S5 – knows how justify decision by referring to food law	A.U.12	1
Skills -	S6 – knows how verify the correctness of implementation and maintenance of pre-requisites programs and procedures based on HACCP principles in a cold store	B.U.9 B.U.20 B.U.22	2 1 3
Skills -	S7 – knows how carry out health status assessment of bivalve molluscs	A.U.19	3
Skills -	S8 – knows how to plan and carry out organoleptic assessment and microbiological testing of hermetically sealed food, food of aquatic origin and egg products; knows how to assess the freshness of table eggs; knows how to prepare a report from this testing;	A.U.2 A.U.10 B.U.6 B.U.23	1 1 3 1
Skills -	S9 – knows how to communicate with veterinarians and other persons involved in supervising food production; knows how to communicate with the supervised entity in a controlled and cultural manner;	A.U.13 A.U.15 A.U.23	3 3 2
Competences -	C1 - is prepared to work as an official veterinarian or private veterinarian cooperating with processing plants in the field of hygiene and safety of hermetically sealed food, food of aquatic origin; poultry meat, eggs and egg products, and in the field of safety of storage refrigeration	KS.3 KS.9 KS.11	2 3 3
Competences -	C2 - is prepared to communicate and cooperate with representatives of food processing plants in the field of food production supervision	KS.3	2
Competences -	C3 - is prepared to deepen his knowledge and to analyse it critically	KS.4 KS.8	3 2
Competences -	C4 - is prepared to do his/her job ethically	KS.2 KS.4 KS.10	3 2 1
Competences -	C5 - shows responsibility for decisions taken	KS.1	3
Competences -	C6 - is prepared to formulate independent conclusions and opinions	KS.5 KS.6 KS.12	3 1 1