

Module title:	Milk hygiene	ECTS	2
Polish translation:	Higiena mleka		
Course:	Veterinary Medicine		

Module language: English		Stage: JM-FVM	
Form of studies: <input checked="" type="checkbox"/> intramural <input type="checkbox"/> extramural	Type of module: <input type="checkbox"/> basic <input checked="" type="checkbox"/> directional <input checked="" type="checkbox"/> mandatory <input type="checkbox"/> elective	Semester: 10	<input type="checkbox"/> winter semester <input checked="" type="checkbox"/> summer semester
Academic year:		Intake 2021/2022	Catalogue number: FVM-V-JMSS-10S-D41_20

Module coordinator:	Dr Joanna Zarzyńska			
Teachers responsible for the module:	Academic teachers of the Institute of Veterinary Medicine; Department of Food Hygiene and Public Health Protection; PhD students in accordance to the internal legal acts; visiting professors; other specialists in the field of study			
Course Description:	<p>The objective of the module is to prepare students for work in the veterinary inspection, in the field of food safety supervision of milk production and processing. Students will learn about the hygienic aspects of milk and dairy production, food quality and safety systems on farm stage and in processing plant, food law, sanitary and veterinary inspection principles, as well as test methods and hygienic assessment of milk and dairy products.</p> <p><b>Laboratory classes (each class 3h):</b> 1. Technology basics and hygiene aspects of the production of pasteurized, sterilized and UHT milk, as well as fermented drinks. 2. Microbiological examination of milk, SCC. 3. Reading and analysis of milk microbiological test results. Factors affecting milk quality (at cow and herd level). The role of a veterinarian on a dairy farm. Organoleptic examination of milk. 4. Physicochemical examination of milk. 5. HACCP system in the processing of milk and dairy products, hazard analysis and determination of critical control points.</p> <p><b>Lectures:</b> 1. Basic milk ingredients. Milk properties. (2h) 2. Milk production in Europe and in the world. Milk and vegetable drinks comparison (2h) 3. Milk hygiene at the barn level. Milking hygiene (2h) 4. Lactic acid bacteria. Fermentation cultures. Probiotics. (2h) 5. Pathogenic microorganisms in milk - food safety aspects. (3h) 6. Safety and hygiene aspects in the production of fermented dairy drinks and cheese. (2h) 7. Food law - milk. (2h)</p> <p>The content of the lectures supplements the content of laboratory classes.</p>			
Teaching forms, number of hours:	a) Lectures; hours 15; b) Laboratory classes; hours 15; c) Seminars; hours ...; d) Clinical laboratories; hours ...; e) Field exercises; hours ...;			
Teaching methods:	<p>Lectures are supported with audio-visual resources (original multimedia presentations, videos).</p> <p>During the laboratory classes (in the theoretical part) original multimedia presentations and videos are used. In the practical part of the laboratory classes, students conduct laboratory tests of milk and milk products (organoleptic, microbiological, physicochemical) and develop documentation of the HACCP system (team work, discussion). As well as, analyse and interpret tabulograms - discussion.</p> <p>1h / week consultations for students – out of classes schedule.            Detailed schedule will be defined by the coordinator of the course at the beginning of semester.            Detailed organization of consultations will be defined by the coordinator of the course at the beginning of semester.</p>			
Formal prerequisites and initial requirements:	Completion of courses: animal physiology, biochemistry, microbiology, feed hygiene, safety of food of animal origin			
Learning effects	Course outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*	
Knowledge:	1	Student knows the principles of consumer health protection by proper supervision over milk production, milk & dairy products processing	B.W.16, B.W.17, B.W.20	3
	2	Student knows the correct hygiene conditions and production technology, as well as food safety in the field of dairy production & processing	B.W.17, B.W.20	3
	3	Student knows and understands the relevant legislation governing veterinary inspection	B.W.21	3

	4	Student knows and understands the procedures related to HACCP – Hazard Analysis and Critical Control Points System	B.W.18	2
	5	Student knows the principles of food law	B.W.21	3
	6	Student knows laboratory techniques for standard testing of milk quality	A.W.15, B.W.6	2
	7	Student knows the principles of ensuring welfare in the barn	B.W.9	2
	8	Student knows the rules of milk sampling	B.W.4	3
Skills:	1	Student knows how to perform tests assessing the quality and safety of milk and dairy products	B.U.18, B.U.22, B.U.23	3
	2	Student knows how to interpret and evaluate the conditions of hygiene and technology of production, as well as and food safety	B.U.18	3
	3	Student knows how to use appropriate legal acts regulating veterinary inspection over food safety	C.U.2	3
	4	Student knows how to prepare HACCP system documentation	B.U.22	2
	5	Student knows how to prepare a sampling protocol, to collect and secure milk samples	B.U.6, B.U.18, B.U.23	3
	6	Student knows how to properly analyse and interpret the results of laboratory tests (quality of raw and processed milk)	B.U.18, B.U.23	3
	7	Student knows how to interpret tabulograms	A.U.19, B.U.20, B.U.5	2
Competences:	1	Student is prepared to cooperation with representatives of other professions in the field of public health protection	KS.11	2
	2	Student is prepared to communication and cooperation with breeders and entrepreneurs in the dairy production sector	KS.11 KS.5	2 3
	3	Student is prepared to search for actual sources of knowledge and lifelong learning	KS.4, KS.8	3
	4	Student is prepared to use food law acts	KS.4, KS.8	3
	5	Student is prepared to critical assessment of knowledge in the field of milk hygiene	KS.7	3
	6	Student is prepared to share own knowledge in the field of hygiene and milk and to use the knowledge of others	KS.9	3
	7	Student is prepared to work in a team	KS.9	3
Objectives of the module required to obtain learning effects:	The objective of the module is to prepare students for work in the veterinary inspection, in the field of food safety supervision of milk production and processing. Students will learn about the hygienic aspects of milk and dairy production, food quality and safety systems on farm stage and in processing plant, food law, sanitary and veterinary inspection principles, as well as test methods and hygienic assessment of milk and dairy products.			
Assessment methods:	Final written test, open questions, 60% required to pass <b>Completion for a grade.</b> There is one final written test covering all theoretical content of lecture and tutorials. Formula of 8 open questions (5 points / question).  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:	The teacher verifies <b>practical effects</b> during the laboratory classes. The student performs activities under the supervision of the lecturer. The student prepares <b>documentation</b> - a report from the performed activity, along with the obtained results interpretation. The teacher evaluates students' documentation (for credit).  To pass the course, it is necessary to obtain at least <b>60%</b> of the total number of points from the written test. The test terms 1st and 2nd are hold in the same form.  <b>Grading scale:</b> <b>60-67% - 3.0</b> <b>68-75%- 3.5</b> <b>76-83%- 4.0</b>			

	<b>84-92% - 4.5</b> <b>93-100% - 5.0</b> No extra assessment methods are anticipated.  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:	<b>One absence is allowed during the practical classes. The condition of joining the final test is passing practical skills evaluation. In the case of excused absence on the written test, the form of completion does not change.</b> <b>Final grade: 100% final written test</b>
Teaching base:	<b>Department of Food Hygiene and Public Health Protection, IVM lecture halls</b>
Mandatory and supportive materials : <ol style="list-style-type: none"> <li>1. Arvanitoyannis I. S. (2009). HACCP and ISO 22000: Application to Foods of Animal Origin (Institute of Food Science and Technology Series). Blackwell Science.</li> <li>2. Bibek Ray &amp; Arun Bhunia: <i>Fundamental food microbiology</i>. Fourth Edition. CRC Press 2007.</li> <li>3. Britz T.J., Robinson R.K.: (2008) Advanced dairy science and technology. Blackwell Publishing Ltd.</li> <li>4. Doyle M.P., Beuchat L.R., Montville T.J.: (2001). Food Microbiology: fundamentals and frontiers 2<sup>nd</sup> Edition. ASM Press, Washington, D.C.</li> <li>5. Mc Landsborough L. (2005). Food Microbiology Laboratory. CRC Press.</li> <li>6. Schmidt R.H., Rodrick G.E: Food safety handbook. USA 2003, Ed. John Wiley &amp; Sons, Inc., USA</li> <li>7. The current legislation of the European Union related to food (EUR – lex) and international legislation (Codex Alimentarius).</li> </ol> Web-sites: <a href="http://www.fao.org">http://www.fao.org</a> . International Dairy Federation <a href="http://www.idf.org">http://www.idf.org</a> . International Dairy Foods Association, <a href="http://www.idfa.com">http://www.idfa.com</a> . 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:	<b>50. h</b>
Total ECTS points, accumulated by students during contact learning:	<b>1 ECTS</b>