

## FOOD HYGIENE AND TECHNOLOGY 2

<b>Study program</b>	Veterinary Medicine
<b>Year of study</b>	V
<b>Semester</b>	II
<b>Regime of discipline</b>	DOB
<b>Discipline category</b>	Dia
<b>Number of lectures hours per week</b>	2
<b>Number of seminar/laboratory/project hours per week</b>	2
<b>Total number of hours according to the curriculum: lectures/seminars/laboratory/project</b>	28 hours of course/ 28 hours of laboratory
<b>Number of transferable credits</b>	2

### SPECIFIC SKILLS

<b>Professional Competence</b>	<p>Acquiring knowledge of animal slaughtering technologies in abattoirs, and technologies for producing and processing food of animal origin.</p> <p>Knowledge of European and national regulations in the field of food hygiene, at all stages of the food chain, from production to distribution. The knowledge acquired will enable the approval of the production, marketing, and consumption of food products, through the acquisition of practical skills in carrying out sensory and laboratory analyses of their quality and safety.</p>
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### LEARNING OUTCOMES

<b>Knowledge</b>	<p>At the end of the course, students will:</p> <ul style="list-style-type: none"> <li>• demonstrate knowledge of European legislation requirements in the field of animal food hygiene;</li> <li>• describe the technological stages of obtaining and processing animal products;</li> <li>• define the conditions necessary to ensure the quality and compliance of raw materials and food products at all stages of the food chain;</li> <li>• recognize spoilage and defect changes of food products.</li> </ul>
<b>Skills</b>	<p>At the end of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• sampling food for sensory evaluation and laboratory analysis;</li> <li>• applying laboratory analysis methods to evaluate the integrity (chemical composition) and freshness of food products of animal origin;</li> <li>• interpreting laboratory test results.</li> </ul>
<b>Responsibility and autonomy</b>	<p>By the end of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• assess the organoleptic, compositional, and freshness characteristics of food products;</li> <li>• determine the intended use of product batches based on laboratory results.</li> </ul>

### COURSE OBJECTIVES

<b>General objective of the course</b>	Acquiring knowledge of slaughtering technologies and the technologies used to produce and process meat and other animal-derived products.
<b>Specific objectives</b>	<ul style="list-style-type: none"> <li>• Knowledge of technologies for producing meat, meat products, and other food products of animal origin.</li> <li>• Knowledge of the hygiene requirements applicable to meat at all stages of the food chain, from the handling of live animals and the slaughtering process through to processing, packaging, storage, transport, and marketing, in accordance with applicable legislation.</li> </ul>

### COURSE CONTENT

<b>LECTURES</b>	<b>Number of hours</b>
Food quality. Stages and objectives of veterinary health intervention in the food chain, to ensure food quality and safety.	2
Veterinary hygiene principles and rules on the location, construction, and operation of slaughterhouses and food processing plants for animal products.	2
Animal slaughter technologies in slaughterhouses; carcass classification.	4
Meat: structure, chemical composition, nutritional and biological value; sensory and	2

technological properties of meat; the microbiology of meat.	
Post-mortem changes in muscle: rigidity, ageing.	2
Meat spoilage: autolysis, maturation of meat from hunting game (game meat aging), putrefaction.	2
Poultry slaughtering technology. Chemical composition, and quality requirements for poultry meat. Microflora of poultry meat.	4
Game meat: sensory, physical-chemical, and microbiological characteristics; wild game processing technology; biochemical changes in muscle.	2
Fish: particularities of structure, chemical composition, microbiological aspects, natural changes and alterations. Methods of preserving fish.	2
Meat products and canned meat: processing technologies, microbiology, hygiene requirements, sensory characteristics, physical and chemical characteristics, microbiological parameters.	4
Unconventional sources of meat: gastropods, lamellibranchiate, cephalopods, crustaceans. Particularities of structure, chemical composition, microbiology, normal changes and alterations.	2
<b>SEMINAR/LABORATORY</b>	<b>Number of hours</b>
Training on occupational safety in the laboratory. Sampling rules for assessing the compliance of food products of animal origin with legal requirements and standards.	2
Determination of the main components of foods of animal origin.	5
Organoleptic examination of meat. Physical and chemical analyses to assess the integrity and freshness of meat. Interpretation of the results.	5
Organoleptic and laboratory analysis of meat-based products.	4
Laboratory analysis of canned meat.	2
Laboratory analysis of fish.	4
Laboratory analysis of animal fats.	2
Practical work exam.	4

#### **BIBLIOGRAPHY:**

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- Feiner F. *Meat products handbook. Practical science and technology*. CRC Press Boca Raton Boston New York Washington, DC.
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- Asma, S.T., Imre, K., Morar, A., Herman, V., Acaroz, U., Mukhtar, H., Arslan-Acaroz, D., Shah, S.R.A., Gerlach, R. *An overview of biofilm formation – combating strategies and mechanisms of action of antibiofilm agents*. Life, 12(8), 2022.
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- Ban-Cucerzan A., Morar A., Tîrziu E., Imre K. *Evaluation of antimicrobial resistance profiles of bacteria isolated from biofilm in meat processing units*. Antibiotics, 12(9), 2023.
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- Reg. (EC) No. 1441/2007 on microbiological criteria for foodstuffs. OJ L 322, 2007.

- Reg. (EC) No. 178/2002 laying down *the general principles and requirements of food law, establishing the EFSA and laying down procedures in matters of food safety*. OJ L 31, 2002
- Reg. (EC) No. 852/2004 *on the hygiene of foodstuffs*. OJ L 139, 2004
- Reg. (EC) No. 853/2004 laying down *specific hygiene rules for on the hygiene of foodstuffs*. OJ L 139, 2004.
- Reg. (EC) No. 1099/2009 on the *protection of animals at the time of killing*. OJ L 303, 2009.

#### ASSESSMENT

Activity type	Assessment criteria	Assessment methods	Percentage of final grade
<b>Lectures</b>	<p>Knowledge of hygiene requirements for animal food processing units.</p> <p>Description of the main technological stages of slaughtering livestock and poultry.</p> <p>Knowledge of the structure and chemical composition of meat (mammals, poultry, fish, game), description of normal and abnormal changes that occur in meat, application of sanctions.</p> <p>Description of technologies for obtaining meat preparations and canned foods. Knowledge of fish marketing categories.</p> <p>Microbiology of meat, meat preparations, fish, and game meat. Organoleptic and physicochemical changes that occur in spoilage processes, sanctions.</p>	<p>Written evaluation</p> <p>To promote the exam the minimum mark = 5 (five).</p> <p>Students who do not get the promotion grade (5 five) on the written evaluation can be reviewed verbally on the same day.</p>	<b>60%</b>
<b>Seminar/laboratory/clinical sessions</b>	<p>Sensory analysis of meat, meat products, and animal fats; testing for integrity and freshness; decisions regarding the intended use of the products based on the results of laboratory analysis.</p>	Practical exam	<b>30%</b>
<b>Other activities</b>	<p>Presentation style, originality, and relevance of references used.</p>	Power point presentation	<b>10%</b>

**Course coordinator:** Assoc. Prof. PhD Adriana MORAR

**Practical activities coordinator L/S/P:** Assoc. Prof. PhD Adriana MORAR  
DVM PhD St. Bianca GHITAN