

Course: Food Hygiene and Technology

UNIVERSITY OF ZAGREB
FACULTY OF VETERINARY MEDICINE
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Division: VETERINARY PUBLIC HEALTH AND FOOD SAFETY

Organisational unit: Hygiene, Technology and Food Safety

E-mail of the course leader: nzdolec@vef.hr

Register No of the organisational unit:

Zagreb, 11/2/2025

	
198021	REPUBLIKA HRVATSKA
Veterinarski fakultet u Zagrebu	
Primijeno:	11.02.2025
Klasifikacijska oznaka	Org. jed.
602-04/24-22/38	251-61-41;251-61-11;
Urudžbeni broj	Prilozi Vrijednost
251-61-17/356-25-135	0 -

COURSE SYLLABUS

Course name: Food Hygiene and Technology

Academic year 2024/2025

Course leader: Full Prof. Nevijo Zdolec

Deputy course leader: Full Prof. Željka Cvrtila

Teachers: Full Prof. Željka Cvrtila, Full Prof. Nevijo Zdolec, Assist. Prof. Tomislav Mikuš, teaching assistant Marta Kiš, DVM, teaching assistant Mladenka Vukšić, DVM

First day of classes: 3/3/2025

Last day of classes: 15/5/2025

Activities - Food Hygiene and Technology (1/3)

Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
03/03/2025	9:00	13:30	t02 Meat processing plant	10E-1, 10E-2		4:30	Nastavnici na predmetu	
04/03/2025	8:15	9:45	p01 Milk and dairy products	10E-1, 10E-2, 10E-3		1:30	Mikuš T.	P_fizika
05/03/2025	14:00	15:30	p02 Veterinary controls in milk production	10E-1, 10E-2, 10E-3		1:30	Zdolec N.	P_mikrobiologija
06/03/2025	14:00	15:30	p03 Chemical composition of milk and dairy products	10E-1, 10E-2, 10E-3		1:30	Cvrtila Ž.	P_mikrobiologija
07/03/2025	12:00	13:30	p04 Hygienic-technological aspects of dairy production 1	10E-1, 10E-2, 10E-3		1:30	Mikuš T.	P_fizika
11/03/2025	12:45	15:45	v01 Testing of milk freshness	10E-1, 10E-2a, V_higijena namirnica		3:00	Nastavnici na predmetu	V_higijena namirnica
12/03/2025	9:00	10:30	t01 City market	10E-1, 10E-2, 10E-3		1:30	Nastavnici na predmetu	
12/03/2025	12:30	15:30	v01 Testing of milk freshness	10E-2b, 10E-3, V_higijena namirnica		3:00	Nastavnici na predmetu	V_higijena namirnica
13/03/2025	9:15	10:45	p05 Hygienic-technological aspects of dairy production 2	10E-1, 10E-2, 10E-3		1:30	Cvrtila Ž.	P_mikrobiologija
13/03/2025	12:30	14:00	v02 Density of milk. Milk adulteration	10E-2b, 10E-3, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
13/03/2025	14:15	15:45	v02 Density of milk. Milk adulteration	10E-1, 10E-2a, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
17/03/2025	9:00	13:30	t03 Milk processing plant	10E-1, 10E-2, 10E-3		4:30	Nastavnici na predmetu	
18/03/2025	8:15	9:45	p06 Hygienic-technological aspects of cheese production	10E-1, 10E-2, 10E-3		1:30	Zdolec N.	P_fiziologija

Activities - Food Hygiene and Technology (2/3)								
Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
18/03/2025	12:00	15:00	v03 Hygienic quality of milk	10E-2b, 10E-3		3:00	Nastavnici na predmetu	V_higijena namirnica
18/03/2025	15:00	18:00	v03 Hygienic quality of milk	10E-1, 10E-2a		3:00	Nastavnici na predmetu	V_higijena namirnica
19/03/2025	9:00	13:30	t04 Egg processing plant	10E-1, 10E-2		4:30	Nastavnici na predmetu	
20/03/2025	8:15	11:15	v04 Hygiene and technology of fermented milk and cheese	10E-2b, 10E-3, V_higijena namirnica		3:00	Nastavnici na predmetu	V_higijena namirnica
20/03/2025	13:15	16:15	v04 Hygiene and technology of fermented milk and cheese	10E-1, 10E-2a, V_higijena namirnica		3:00	Nastavnici na predmetu	V_higijena namirnica
26/03/2025	9:15	10:45	p07 Packaging of milk and dairy products. Additives. Allergens.	10E-1, 10E-2, 10E-3		1:30	Cvrtila Ž.	P_fizika
27/03/2025	9:15	10:45	p08 Veterinary inspection of fish	10E-1, 10E-2, 10E-3		1:30	Mikuš T.	P_mikrobiologija
31/03/2025	12:30	14:00	p09 Composition and quality of fish, crustaceans and shellfish	10E-1, 10E-2, 10E-3		1:30	Mikuš T.	P_fizika
02/04/2025	13:00	14:30	p10 Eggs and honey	10E-1, 10E-2, 10E-3		1:30	Cvrtila Ž.	P_fizika
08/04/2025	14:00	15:30	p11 Prerequisite programmes	10E-1, 10E-2, 10E-3		1:30	Zdolec N.	P_mikrobiologija
09/04/2025	13:30	15:00	p12 HACCP	10E-1, 10E-2, 10E-3		1:30	Zdolec N.	P_mikrobiologija
10/04/2025	14:30	16:00	p13 Official controls	10E-1, 10E-2, 10E-3		1:30	Zdolec N.	P_mikrobiologija
14/04/2025	8:30	10:00	v05 Hygiene and technology of butter other dairy products	10E-2b, 10E-3, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica

Activities - Food Hygiene and Technology (3/3)								
Start Date	Start T	End Ti	Subject	Group	Note	Length	Instructor	Room
14/04/2025	10:00	11:30	v06 Eggs	10E-2b, 10E-3		1:30	Nastavnici na predmetu	V_higijena namirnica
14/04/2025	12:00	13:30	v05 Hygiene and technology of butter other dairy products	10E-1, 10E-2a, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
14/04/2025	13:30	15:00	v06 Eggs	10E-1, 10E-2a		1:30	Nastavnici na predmetu	V_higijena namirnica
23/04/2025	9:15	11:30	v07 Fish, fish products, shelfish	10E-2b, 10E-3		2:15	Nastavnici na predmetu	V_higijena namirnica
24/04/2025	12:00	14:15	v07 Fish, fish products, shelfish	10E-1, 10E-2a		2:15	Nastavnici na predmetu	V_higijena namirnica
05/05/2025	13:00	14:30	p14 Food froud	10E-1, 10E-2, 10E-3		1:30	Cvrtila Ž.	P_mikrobiologija
06/05/2025	12:30	14:00	p15 Other alternative foods of animal origin and future food safety guidelines	10E-1, 10E-2, 10E-3		1:30	Mikuš T.	P_mikrobiologija
08/05/2025	12:30	14:00	v08 HACCP contstructional practicals	10E-2b, 10E-3, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
08/05/2025	14:00	15:30	v09 Microbiology constructional	10E-2b, 10E-3, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
15/05/2025	11:00	12:30	v08 HACCP contstructional practicals	10E-1, 10E-2a, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
15/05/2025	12:30	14:00	v09 Microbiology constructional	10E-1, 10E-2a, V_higijena namirnica		1:30	Nastavnici na predmetu	V_higijena namirnica
Total: 37						75:00		

STUDENT OBLIGATIONS

Lecture attendance	Classes are held during 60 hours of lectures. In order to achieve a minimum of 3 points, a student should attend 30 hours of lectures (15 h in IX. semester and 15 h in X. semester). Attendance at one hour of lectures is scored with 0.1 points (a maximum of 6 points can be collected, or 60 hours x 0.1 points).
Seminars attendance	-
Practicals attendance	Classes are held through 105 hours of exercises (28 hours of special clinical exercises, 20 field course, 38 laboratory exercises and 19 construction exercises). In order to achieve the minimum number of points (8), the student should be present in 73 hours of exercises (42 h in IX. Semester and 31 h in X. semester). The maximum number of points that can be collected during 105 hours of exercises is 12.
Active participation in seminars and practicals	The maximum number of points that a student can collect is 10. To achieve this, he/she must collect a maximum of 5 points per semester for preparation for the exercise and positive answers during field and laboratory exercises (each activity is 2.5 points). The minimum number of points that a student should collect per semester is 2.5.
Final exam	The final exam includes all the results of monitoring activities during classes. The exam is oral. At the oral exam, the student answers 10 questions, with each correct answer being scored with 4 points. The maximum number of points for the oral exam is 40. The minimum number of points is 24, and for a student to achieve them, he/she must answer at least 6 questions (24 points) correctly.
Examination requirements	Student requirements are defined in the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine. Given the above, the student must acquire a minimum number of points from all assessment elements in order to take the final exam. Article 41: a student can justifiably be absent from up to 50 % of the lectures and 30 % of the exercises.

GRADING AND EVALUATING STUDENT WORK

Continuous knowledge-checking (mid-terms)	The student must attend the first organized term of the test. In case of justified absence (medical proof), the student can access the remedial test. The first preliminary test (end of the IX sem) covers teaching units referring to veterinary control in meat production (4 questions) and lab exercises (4 questions). The second preliminary test (X sem) covers veterinary inspection, control and examination of milk, fish, eggs, honey and other foodstuffs and technological processing in production of milk, fish, eggs, honey and other foodstuffs (4 questions) and lab exercises (4 questions).
Final exams (dates)	20/5/2025, 27/6/2025, 9/7/2025, 4/9/2025, 16/9/2025
Form of final exam	Oral exam

LITERATURE

Obligatory literature	<p>KOZAČINSKI et al. (2021): Handbook of laboratory practicals in Food Hygiene and Technology. Faculty of Veterinary Medicine, UNIZG. In press.</p> <p>NINIOS, N., J. LUNDEN, H. KORKEALA, M. FREDRIKSSON-AHOMA (2014): Meat inspection and control in the slaughterhouse. Wiley Blackwell.</p> <p>D.S. COLLINS, R. J. HUEY (2015): Gracey's Meat hygiene. 11th edition. A John Wiley & Sons, Ltd., Publication, 2015.</p> <p>RAY, B., A. BHUNIA (2014): Fundamental Food Microbiology. 5th edition. CRC Taylor & Francis, USA.</p> <p>BORDA. D., A. I. NICOLAU, P. RASPOR (2018): Trends in Fish Processing Technologies. CRC Taylor & Francis, USA.</p> <p>CHANDAN, C.R., A. KILARA, N. P. SHAH (2008): Dairy Processing & Quality Assurance. A John Wiley & Sons, Ltd., Publication, 2008.</p> <p>MEAD, G.C. (2004): Poultry meat processing and quality. CRC Press. 2004.</p> <p>SUTHERLAND J. P., A. H. VARNAM, M. G. EVANS (1986): A colour Atlas of food quality control. A Wolfe Science Book.</p> <p>ZDOLEC, N. (2017): Fermented Meat Products: Health Aspects. CRC Taylor & Francis, USA.</p>
Optional literature	<p>REGULATION (EC) No 178/2002 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety</p> <p>REGULATION (EC) No 852/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the hygiene of foodstuffs</p> <p>REGULATION (EC) No 853/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down specific hygiene rules of food of animal origin</p> <p>REGULATION (EU) 2017/625 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products</p>

OBJECTIVES AND LEARNING OUTCOMES

Course objectives	In addition to the general aim and tasks, the education of future Doctor of Veterinary Medicine has a special aim. It is the task of lecturers to teach the students how to perform independently all expert activities, and to apply the scientifically verified standards of hygiene and technology within the frameworks of the veterinary inspection and evaluation of food safety and quality. Of course, this is possible only by means of education in the field of application of process methods (technology) in the production of food products of high quality and hygiene standards, all in the context of improvement of veterinary public health.
Learning outcomes	By the completion of the course students should be able to: <ul style="list-style-type: none">- explain the structure, purpose and methods of veterinary inspection, control and monitoring of production, processing and distribution of food of animal origin- identify hazards and risks in the production and distribution of food of animal origin- interpret the results of food quality assessment and food safety- distinguish the type of food according to the production process- define acceptability factors of food for human consumption- incorporate legislation in the preparation and analysis reports in the field of hygiene and technology of food of animal origin- evaluate production hygiene procedures in the facility and process control indicators

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GRADING SCHEME

<i>Points</i>	<i>Grade</i>
Up to 59	1 (F)
60-76	2 (D,E)
77-84	3 (C)
85-92	4 (B)
93-100	5 (A)

Course leader



Head of organizational unit:



Note: The course leader is required to submit a Course Syllabus to all teachers and associates pertaining to the Course