

General information	
Academic subject	HYGIENE AND SAFETY OF BIVALVE MOLLUSCS
Degree course	Veterinary Medicine
Academic Year	2021/2022
European Credit Transfer and Accumulation System (ECTS)	3
Language	Italian
Academic calendar (starting and ending date)	II bimester
Attendance	Mandatory

Professor/ Lecturer	
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Department and address	Veterinary Medicine Campus – Valenzano (BA)
Virtual headquarters	
Tutoring (time and day)	Tuesday: 12.00-13.00 hours Thursday: 12.00-13.00 hours (upon request by email)

Syllabus	
Learning Objectives	The course provides the essential and fundamental elements of knowledge to evaluate and manage the hygienic and sanitary quality of the bivalve mollusc supply chain.
Course prerequisites	The student should know EC Reg. 852/04 concerning the hygiene of food production and should have acquired the principles of control system in accordance to the HACCP method; moreover should have basic knowledge of microbiology and food-borne diseases together with traditional food preservation technologies (sterilization, sanitization, disinfection, salting, pasteurization, smoking). The student should have acquired knowledge related to the toxicology of environmental contaminants.
Contents	Anatomy and physiology of filter organisms. Recognition of species of commercial interest. Chemical and physical methods of purification of bivalve molluscs. Structural and instrumental requirements for the Community recognition of the Molluscs Purification Center and the Molluscs Dispatch Centres (CDM and CSM). Packaging and labeling of bivalve molluscs. Inspection procedures for the safety control of bivalve molluscs. Microbiology of bivalve molluscs: the microbiological risk: halophilic vibrios, E. coli, Salmonella, enteric viruses. The algal biotoxins and the provisions in EC Reg. 853/04 for the limits for the marketing. The chemical risk: contamination by heavy metals, PCBs and dioxins, polycyclic aromatic hydrocarbons: provisions of EC Reg. 1881/06. EU sector regulations: EC Reg. 853/04 and EC Reg. 1441/07.
Books and bibliography	PALESE L. A. “ Il controllo sanitario e qualitativo dei prodotti alimentari della pesca” Ed. Piccin TIECCO G. “Igiene tecnologia degli alimenti di o.a.” Ed. Edagricole “Ispezione degli alimenti” (a cura di Cenci Goga) Ed. Le point Vétérinaire Lesson Notes and slides projected in class.
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
75	26	25	24
ECTS			
3	2	1	
Teaching strategy		<p>The theoretical part of the course takes place in a classroom equipped with multimedia tools such as PC, projector, internet connection, and will be projected slides in power point.</p> <p>The exercises are carried out both in the laboratories of the Food Safety Unit, and in the purification centers (CDM), shellfish dispatch centers (CSM), fish farms and primary production operators (farms for mussel farming). In addition, microbiology exercises are provided for the execution of the analysis required by Reg 1441/07 for bivalve molluscs, (research Salmonella spp and E. coli). During these exercises the students, divided into small groups (maximum 10 people), are followed by staff employed by the University, collaborators or external personnel in the case of field exercises.</p> <p>During the course there are learning verifications.</p>	
Expected learning outcomes			
Knowledge and understanding on:		<ul style="list-style-type: none"> ○ The student should know the techniques of purification and marketing of the product both fresh and processed; ○ The student should know the microbiological and chemical analytical methods to evaluate the hygienic-sanitary quality of the product ○ The student should acquire knowledge of National and European Food law and regulations regarding to the specific sector. 	
Applying knowledge and understanding on:		<ul style="list-style-type: none"> ○ The student should acquire the ability to evaluate and manage the production chain of bivalve molluscs from the hygienic-sanitary point of view ○ The student should be able to control and inspect the production chain of fresh and processed bivalve molluscs ○ the student should be able to inspect the product both for the recognition of species and its health quality 	
Soft skills		<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Manage complex technical/professional activities or projects takes responsibility for decisions in unpredictable work contextsxxxxxxxx • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Take responsibility for managing the professional development of individuals and groups • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Develop learning skills that allow them to continue studies mostly in a self-directed or autonomous way. 	
Assessment and feedback			
Methods of assessment		<ul style="list-style-type: none"> • The knowledge acquired is verified with a practical species recognition test, together with an inspection evaluation of the freshness of the product, and an oral test on program topics. 	
Evaluation criteria		<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> 	

	<ul style="list-style-type: none"> ○ the student should demonstrate the skills acquired during the practical exercises, knowledge of inspection methods and technical and analytical terminology, preparatory to the evaluation of operational protocols and standard operating procedures to be applied to the bivalve mollusc chain.
Criteria for assessment and attribution of the final mark	<p>The exam is pass when the grade is greater than or equal to 18. The final evaluation will be based on:</p> <p>Objective tests: well-calibrated on the objectives that you want to verify and make the judgment independent from the teacher subjectivity. Objectivity consists of the possibility of predetermining the accuracy of the answers.</p> <p>Non-objective tests: they foresee open stimuli and responses and allow the evaluation of complex mental processes, such as the ability to communicate one's thoughts, the ability to construct a logical discourse and to grasp the essential elements of a topic, the critical sense and the ability to find original solutions</p>
Additional information	