

COURSE OF STUDY Food Science and Technology (L26)
ACADEMIC YEAR 2023-2024
ACADEMIC SUBJECT Produce and goods pests (3 ECTS) - I.C. Alterations in produce and stored goods (9 CFU)

General information	
Year of the course	<i>II year</i>
Academic calendar (starting and ending date)	<i>I semester (25 September 2023 - 19 January 2024)</i>
Credits (CFU/ETCS):	<i>3 ETCS</i>
SSD	<i>Genera and Applied Entomology, AGR/11</i>
Language	<i>Italian, handouts in English</i>
Mode of attendance	<i>Class attendance optional, but recommended</i>

Professor/ Lecturer	
Name and Surname	<i>Francesco Porcelli</i>
E-mail	<i>francesco.porcelli@uniba.it</i>
Telephone	<i>+39 329 8112593</i>
Department and address	<i>DISSPA, office, IV building, V floor. Campus Quagliariello, via Orabona 4, 70125, Former Agriculture Faculty.</i>
Virtual room	<i>Teams Code z38mvkj</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>By appointment, agreed upon via WA.</i>

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<i>75</i>	<i>16</i>	<i>14</i>	<i>45</i>
CFU/ETCS			
<i>3</i>	<i>2</i>	<i>1</i>	

Learning Objectives	<i>The course permits to acquire adequate basic and applied knowledge to recognise alterations and causal agents of a biotic and abiotic nature affecting produce and goods for processing. Suggesting the candidate how to apply strategies, means and methods of control to safeguard the quality of the same fresh produce and stored goods. The course will explore the main interactions between animal pests and foodstuffs to develop the ability to assess the extent and consequences of alterations in the composition and characteristics on processed products. In addition, the course will recall basic valuable knowledge for controlling harmful species and their damage assessment.</i>
Course prerequisites	<i>Knowledge of Entomology and General Biology. Knowledge of the constituents of foodstuffs and of main agri-food produce and stored goods.</i>

Teaching strategies	<i>The course topics will be covered with the aid of Keynote presentations, classroom, and laboratory exercises. All material used for the lectures will be available to students as .pdf files on the web platform (TEAMS) before the course kick-off.</i>

<p>Expected learning outcomes in terms of</p> <p>DD1 Knowledge and understanding.</p> <p>DD2 Applied Knowledge and understanding.</p> <p>DD3 Soft skills</p> <p>DD4</p> <p>DD5</p>	<ul style="list-style-type: none"> ○ Knowledge of the main interactions between animal pests and produce or stored goods; ○ Ability to assess the extent and consequences of alterations on food composition and characteristics ○ Ability to trace the drivers of alterations in food characteristics and quality over time ○ Ability to describe the ecological and biological characteristics of animal pest guilds. ○ Ability to identify component species of animal pest guilds. <p>Independence of judgement</p> <ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> ○ Theoretical and practical ability to orientate production and conservation premises to prevent and avoid pests and consequent damage. Theoretical and practical ability to identify activities crucial to preserving food quality. <ul style="list-style-type: none"> • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Autonomy in storytelling and ability to share and convey the theoretical and practical reasons for appropriate technical choices to preserve food characteristics, • <i>Capacities to continue learning.</i> <ul style="list-style-type: none"> ○ Autonomy in professional updating on the animal agents of alterations, the alterations they can induce and the means of prevention.
<p>Syllabus</p>	
<p>Content knowledge</p>	<p><i>Elements of general entomology useful for understanding the features of animal agents of alteration of produce and stored goods, recognising the Orders to which they belong and suggesting the identification of species (1 CFU f/p). Meaning and sense of colonisation waves. Bionomics of species of interest (1 CFU f/p). Hints on mitigation techniques and damage assessment. Tips for compiling an expert report or opinion (1 CFU f/p).</i></p>
<p>Texts and readings</p>	<p><i>Minelli A. & Bologna M.A. Ed(s) (2023). Sistematica ed evoluzione degli esapodi, Liguori Editore, ISBN978-88-207-6988-8, 648 pp.</i> <i>Gorham J.R. (Ed.) (1987). - Insect and Mite Pests in Food; An Illustrated Key. U.S.D.A., Agriculture Handbook Number 655, 767 pp.</i></p>
<p>Notes, additional materials</p>	<p><i>Khoury C & Bianchi R. (2010). Artropodi delle derrate alimentari: chiavi di identificazione e procedure operative per la determinazione dei principali infestanti entomatici. Rapporti ISTISAN 10/18, 34 pp</i></p>
<p>Repository</p>	<p><i>Please visit the course Teams</i></p>
<p>Assessment</p>	
<p>Assessment methods</p>	<p>The assessment interview will cover three teaching topics proposed by the lecturer from among those developed during the theoretical and theoretical-practical lectures in the classroom and laboratory. The candidate will present his/her knowledge using the terminology and language suggested during the</p>

	lectures or found on the notes or in the recommended texts. An intermediate examination is possible for the course of each year, as a test on the topics developed by the date of the exemption. The test will be graded in thirtieths and, in the event of success (>17/30), the final oral test will cover the remaining teaching content, with references to the topics of the entire course. The exemption grade will be weighted with the final grade. Assessments will be communicated via ESSE3.
Assessment criteria	<ul style="list-style-type: none"> • Knowledge and understanding <ul style="list-style-type: none"> ○ Identifying the main food pests and describing their damage • Applying knowledge and understanding <ul style="list-style-type: none"> ○ Reconstructing the phenomena and conditions determining pests and damage • Autonomy of judgment <ul style="list-style-type: none"> ○ Devise sensible activities to resolve ongoing infestations and prevent their recurrence. • Communicating knowledge and understanding. <ul style="list-style-type: none"> ○ List, describe and structure the biological and physic-chemical phenomena that predispose and enable infestations. • Communication skills. <ul style="list-style-type: none"> ○ Ability to create disseminative digital or conventional media. • Capacities to continue learning. <ul style="list-style-type: none"> ○ Ability to update and upgrade the case studies chosen based on proper pests, alterations, food or raw materials
Final exam and grading criteria	Learning will be measured as the critical ability to discuss the mitigation and pest management e issues posed during produce and goods pest infestations. The candidate should be able to recognise the pest species and their bionomics by characteristics infesting insect preferences or behaviours presented in the course. Moreover, the candidate will suggest damage mitigation and pest management measures. The pass mark (18/30) is achieved by discussing extensively and in depth for at least 10' one of the three topics proposed by the lecturer. The candidate who discusses the three topics with quality of presentation, argumentative ability, autonomy of judgement and integration between the topics will bring the maximum mark (30/30). The case of highest marks and original discussion merits a 'Cum Laude' grade. The overall learning objective is to find in the candidate the intent to continuously improve the damage mitigation and pest management to avoid produce and goods infestations resulting in scarce food security. The examination for foreign students can be taken in English.
Further information	
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