

General information	
Academic subject	Insects as food (I.C Food entomology and post-harvest pathology)
Degree course	<i>Food Science and Technology (LM70)</i>
Academic Year	<i>Third</i>
European Credit Transfer and Accumulation System (ECTS)	3 ECTS
Language	<i>Italian</i>
Academic calendar (starting and ending date)	<i>September 26th, 2022 – January 20th, 2023</i>
Attendance	<i>Not Compulsory</i>

Professor/ Lecturer	
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Department and address	DiSSPA
Virtual headquarters	Microsoft Teams
Tutoring (time and day)	Monday-Friday 9.00-16.00

Syllabus	
Learning Objectives	<i>The course aims to provide knowledge about the properties of insects as food, the limitations and risks in their misuse, and the characteristics of insects offered commercially as food. The course discusses the attitudes and opportunities for the breeding and semi-processing of insects intended to broaden consumer choice. The training aim is to acquire skills useful in the appropriate choice of species and processes for different food applications.</i>
Course prerequisites	<i>Medium grade knowledge in General and Applied Entomology</i>
Contents	<ul style="list-style-type: none"> • <i>Application of the principles of Entomology to the study, identification and qualitative assessment of food insects. Technologies, techniques, materials and methods necessary for the investigation of food insects</i> • <i>Generalities on edible insects</i> • <i>Collection and first processing techniques</i> • <i>Macroscopic and microscopic alpha-taxonomic methods</i> • <i>Evaluation of protein, fat, cuticle and other minor components of the edible insect</i> • <i>Evaluation of conservation status and alterations</i> • <i>Identification from semi-transformed or dead marketed insects</i> • <i>Techniques and problems of mass rearing</i> • <i>Isolation of ecto- and endosymbiont microorganisms associated with the harvested, reared or traded crop</i> <p><i>Application of evaluation of insects and their semi-finished products or preparations proposed as food, discussion of the cases studied.</i></p>
Books and bibliography	<ul style="list-style-type: none"> • <i>- Lecture notes, distributed as a .pdf document at the start of the course. Copies of the slides presented and discussed during the lectures will be made available on online platforms (e.g. TEAMS platform).</i> • <i>Reviews and scientific articles related to the topics and case studies covered.</i> • <i>For further information:</i> • <i>Bodenheimer F.S. (1951). Insects as Human Food a chapter of the ecology of man. Springer-Science+Business Media, B.Y. 352 pp.</i> • <i>Halloran A., Flore R., Vantomme P., Roos N. (2018). Edible Insects in Sustainable Food Systems. Springer International Publishing AG, 479 pp.</i>

Additional materials	<i>Notes, slides and other bibliographic materials will be furnished during the course</i>
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Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/Self-study hours
Hours			
75	16	14	45
ECTS			
3	2	1	
Teaching strategy		<p><i>The course topics will be covered with the help of Keynote presentations, video clips, classroom or laboratory exercises, reading of regulatory texts. Use of case studies.</i></p> <p><i>All the material used for the lessons will be made available to the students on special web platforms (TEAMS).</i></p>	
Expected learning outcomes		<p><i>The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)</i></p>	
Knowledge and understanding on:		<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ <i>The course will provide knowledge about the main insect species that can be used as food and the opportunities and problems faced by humans in their experience as entomophagists.</i> 	
Applying knowledge and understanding on:		<p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ <i>Knowledge of the main macro- and microscopic techniques for the identification of food insect's species</i> ○ <i>Ability to assess the quality and safety of insects proposed as semi-processed, processed and preserved for human consumption</i> 	
Soft skills		<p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ <i>Autonomy of judgement in assessing the quality of food insects, autonomy in recognising the main changes in food insects</i> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ <i>Ability to share, present and develop the critical sense of listeners interested in the topic of insects as food</i> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ <i>Ability to learn the use of technical, operational and cultural tools necessary for the best and safest use of food insects</i> 	
<p>The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification).</p>			

Assessment and feedback	
Methods of assessment	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory, production plants, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for a year.</p>

	<p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor's degree in food science and Technology.</p> <p>The foreign student's profit test can be done in English in the way described above.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describe the main species that can be used as food and represent their strengths and limitations as human food. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Describe the main identification techniques of the insects taught. Evaluate the quality and safety of edible insects <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Identifying assessment parameters and recognising undesirable changes and sources of food insecurity <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Outlining and critical presentation of teaching topics, with digital tools <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Demonstrate problem solving skills, transforming knowledge into know-how.
Criteria for assessment and attribution of the final mark	<p>The evaluation criteria that contribute to the attribution of the final mark will be: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills</p>
Additional information	