

COURSE OF STUDY *Master degree: Food Science and Technology (LM70)*
ACADEMIC YEAR *2023-2024*
ACADEMIC SUBJECT *Honey bee products (3 ECTS) - I.C. Food entomology and post-harvest pathology (9 ECTS)*

General information	
Year of the course	<i>Second</i>
Academic calendar (starting and ending date)	<i>First semester (Sept 25th 2023 - Jan 19th 2024)</i>
Credits (CFU/ETCS):	<i>3</i>
SSD	<i>General and Applied Entomology (AGR/11)</i>
Language	<i>Italian</i>
Mode of attendance	<i>No Compulsory</i>

Professor/ Lecturer	
Name and Surname	<i>Eustachio Tarasco</i>
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Telephone	<i>0805442877</i>
Department and address	<i>fifth floor - library building - ex Agraria faculty</i>
Virtual room	<i>Microsoft Teams Code: lwu0b2g</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>Monday to Friday by appointment only.</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	The teaching is aimed at providing hints on the bio-ethology of honey bees and more in-depth knowledge on production techniques, characteristics, possible uses and on the enhancement of honey bee products. The laboratory activities will aim to bring the student closer to the world of bees by guiding him through sensory, chemical-physical and melissopalinalogical analyzes, to discover the diversity and quality of honeys.
Course prerequisites	Knowledge of general zoology and entomology.

Teaching strategie	Lectures will be presented through PC assisted tools (PowerPoint, video). Field and laboratory classes, reading of regulations will be experienced. Lectures, notes and educational supplies will be provided Microsoft Teams platform.
Expected learning outcomes in terms of	
Knowledge and understanding on:	<ul style="list-style-type: none"> • Knowledge of production techniques, characteristics of hive products and criteria for enhancing them

Applying knowledge and understanding on:	<ul style="list-style-type: none"> • Ability to associate the characteristics of the hive products to the production areas. • Ability to produce and market hive products in compliance with current legislation.
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to propose production methods suited to specific company needs and to enhance the products of the hive. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate theoretical and practical knowledge on hive products by effectively discussing them with the interlocutors. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to keep knowledge of beehive products constantly updated and to intercept new inputs from the world of production and the market to promote qualitative and quantitative improvements to companies in the sector.
Syllabus	
Content knowledge	<p>Essential elements of honey bee bio-ethology and ecology. Raw materials, methods of production and characteristics of bee products. Equipment and operation of a honey house. Criteria for enhancing the honey bee products (honey, royal jelly, propolis, etc.). Sensory, chemical-physical and melissopalinalogical analyzes of honeys. Notes on beekeeping legislation.</p>
Texts and readings	<p>Bortolotti L., Mazzacani G.L., 2017. I prodotti dell'alveare. Edagricole-New Business Media, Milano, 196 pp. Contessi A., 2004. Le Api. Biologia, allevamento, prodotti (third edition). Edagricole, Bologna: 497 pp.</p>
Notes, additional materials	<ul style="list-style-type: none"> • Scientific papers • Lecture's notes
Repository	All teaching material will be available to students on web platforms (class Teams code lwu0b2g).

Assessment	
Assessment methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in practical activities (laboratory and educational visits). Students 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 one academic year (Art. 4 of the Didactic Regulations of the Master's Degree Course in Food Science and Technology). The result of the mid-term exam is communicated by publication in the student's electronic register and contributes to the assessment of the profit examination by means of calculation of the weighted average. The exam for foreign students may be conducted in English as described above.</p>
Assessment criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to clearly and correctly explain the topics covered during the lessons, adequately motivating the answers. • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to apply the knowledge acquired during the lessons to concrete cases of the honey bee product chain. • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Ability to propose and argue possible solutions to problems inherent to honey bee products. • <i>Communicating knowledge and understanding</i>

	<ul style="list-style-type: none"> ○ Ability to discuss in a clear, correct and convincing way the arguments concerning the products of honey bees. ● <i>Communication skills</i> <ul style="list-style-type: none"> ○ The student will be evaluated considering the use of appropriate technical language. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Demonstration of having assimilated the concepts exposed on the products of the hive by applying them to cases other than those dealt with in class.
Final exam and grading criteria	<p>The assessment of the student's preparation is based on predetermined criteria in accordance with the Didactic Regulations of the Master's Degree Course in Food Science and Technology (art. 4).</p> <p>The Examination Committee has a score ranging from a minimum of 18 to a maximum of 30 points for a positive assessment of the student's performance. By unanimous vote of its members, the Board may award honours in cases where the final mark is 30.</p>
Further information	