Bachelor Programme: Food Science and Technology
Course: Food Processing Technology (6 ECTS)
(4 ECTS of Lectures + 2 ECTS of Laboratory or field classes)

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Educational Goals
The main characteristics of raw materials and the technologic issues of wine-making, dairy products and oil and fat production will be discussed. Besides, will be critically discussed the phenomena involved by processing technologies with regard to the improvement of shelf-life and the maintaining of nutritional and sensory properties.

Acquirable skills
The teaching aims to give to the students the technical and scientific basis to address the control of production processes in the field of Agricultural Industries (Wine, dairy and Oil). The knowledge of chemical characteristics of raw material and their evolution over the technological processes will give to the student a useful tool to verify the chain of production. These skills are considered preliminary deal for the subsequent disciplines of study, as well as enable the conduct of activities in the agro-food processing.

The expected learning outcomes, in terms of knowledge and skills, are provided in Annex A of the academic regulations of the Degree (expressed through the European Descriptors of the qualification, Area of supplementary and complementary educational activities).

Programme (1 ECTS of Lecture = 8 hours; 1 ECTS of Laboratory and field classes = 14 hours)

<table>
<thead>
<tr>
<th>Topic/Subject</th>
<th>N. ECTS</th>
<th>Number of hours</th>
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<tr>
<td></td>
<td></td>
<td>Lecture</td>
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<tr>
<td><strong>Oenological sector</strong></td>
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<tr>
<td>Chemical and biochemical constituents of grapes. The aging and technology role of sugars, organic acids, polyphenols, pectic substances, nitrogenous substances, enzymes, vitamins and minerals.</td>
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<tr>
<td>Role of enzymes, yeasts and sulphur dioxide in oenology. Red winemaking. Winemaking with carbonic maceration. White winemaking.</td>
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<tr>
<td>Turbidity and clarification of wine. Stabilization of wines. Defects and abnormalities of wines. Special wines.</td>
<td>0.5</td>
<td>4</td>
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<td>Chemical, physical and sensorial analysis: principles and methodologies of common analytical procedures for quality control of wine.</td>
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<td><strong>Oil sector</strong></td>
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<tr>
<td>Lipid classification. Fatty acids, tryacylglycerols, minor and polar and not polar compounds. Lipids alteration: lipolysis and oxidation processes.</td>
<td>0.5</td>
<td>4</td>
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<tr>
<td>Production process of virgin olive oil. Classic and innovative extraction systems.</td>
<td>0.5</td>
<td>4</td>
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Refining processing: degumming, deacidification, bleaching, deodorization and winterization. 0.5 4 / 7

Chemical, physical and sensorial analysis: principles and methodologies of common analytical procedures for quality and purity control of olive oil. Dairy sector 0.5 / 7

The main components of milk: fat, proteins and carbohydrates. The minor components of milk: vitamins, enzymes, organic acids, non-protein nitrogen, microorganisms and cell components. Acid and rennet coagulation. 0.5 4 / 7

Production process of hard and filata pasta cheese. Defects and alteration of cheese. Production process of ricotta cheese, cream and butter. 0.5 4 / 7

Principles and methodologies of common analytical procedures for quality control of milk. 0.5 / 7

Total 6 32 28

Exam

For students enrolled on the year of the course in which the teaching is done there will be a test of oral exoneration. The outcome of this test contributes to the evaluation of the examination of profit and is valid for one academic year.

The exam consists of an oral exam on the topics developed during the hours of theory and practice lectures in the classroom and in the laboratory / production companies, as reported in the Academic Regulations Degree in Food Science and Technology (article 9) and in the curriculum (Annex a).

The evaluation of the student’s preparation is based on pre-established criteria, as detailed in Annex A of the Academic Regulations for the Degree in Food Science and Technology. For students who have stood the test of exoneration, the profit assessment examination includes the exoneration score.

For foreign students it is expected conducting an oral exam in English with the aid of a power point presentation.

Support materials

- Note of the lecture distributed during the course
- Various authors. OLEUM "Manuale dell’olio da olive". Edagricole, Bologna, 2011.
- Appunti dalle lezioni

Additional readings


Visiting hours

Tuesday-Friday by previous agreement at the “Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti (DiSSPA)".
Teaching procedures

Lectures will be presented through PC assisted tools (Power Point).