

General Information	
Academic subject	Food processing plants (I.C. Agro-food processing plants)
Degree course	Bachelor programme: Food Science and Technology
ECTS credits	6 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	<b>Biagio Bianchi</b>	<a href="mailto:biagio.bianchi@uniba.it">biagio.bianchi@uniba.it</a>	AGR09

ECTS credits details	
Basic teaching activities	4 ECTS Lectures   2 ECTS Laboratory or field classes

Class schedule	
Period	II semester
Course year	Second
Type of class	Lecture- workshops

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	March 5 <sup>th</sup> , 2017
Class ends	June 22 <sup>th</sup> , 2018

Syllabus	
Prerequisites/requirements	Knowledge of: Physics, Calculus and Unit Operations.
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Mastery of logical and cognitive tools to understand the main transformation processes of the food industry and the combination: production process - product quality;</li> <li>○ Knowledge of the criteria for the use of machines and plants for food processing and storage.</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Knowledge of the influence of the technical solutions adopted on crops and breeding on the quality of raw materials;</li> <li>○ knowledge of the main dimensional, constructive and design aspects of the food industries;</li> <li>○ understanding of structure-function relationships in food systems and their changes in processes;</li> <li>○ risk analysis for food machines.</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Ability to correctly carry out the research for mechanical and plant solutions that are appropriate to change the characteristics and quality of foodstuffs;</li> <li>○ ability to correctly guide the choice of suitable technical solutions to monitor the characteristics and quality of food products during processing;</li> <li>○ ability to evaluate technical and plant choices related to the environmental sustainability of primary production, with particular reference to wastewater purification and by-products recovering.</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Ability to establish a professional dialogue with other</li> </ul>

	<p>professionals and operators in the industry, with particular reference to the basic design of processing industries, the definition of production layouts, and the testing of plants.</p> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Ability to develop and update knowledges of machines and plants for primary products, wastewater purification, waste management and by-product recovering.</li> </ul> <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>
Contents	<ul style="list-style-type: none"> <li>• INDICATIONS OF APPLIED MECHANICS</li> <li>• INDICATIONS ON ELECTRIC MACHINES</li> <li>• INDICATIONS OF FLUID MACHINES</li> <li>• EQUIPMENT AND MACHINES FOR OLIVE OIL PROCESSING</li> <li>• EQUIPMENT AND MACHINES FOR WINE PROCESSING</li> <li>• EQUIPMENT AND MACHINES FOR DAIRY PROCESSING</li> <li>• EFFLUENT DISCHARGE PLANTS MACHINES</li> </ul>
Course program	
Reference books	<p><i>Support materials</i></p> <ul style="list-style-type: none"> <li>• Lecture notes</li> <li>• P. De Vita, G. De Vita. "MANUALE DI MECCANICA ENOLOGICA". ULRICO HOEPLI MILANO (2007);</li> <li>▪ Friso D., "INGEGNERIA DELL'INDUSTRIA AGROALIMENTARE", Volume I – Teoria, applicazioni e dimensionamento delle macchine e impianti per le operazioni unitarie, CLEUP sc, Padova, 2017 (www.cleup.it).</li> </ul> <p><i>Additional readings</i></p> <ol style="list-style-type: none"> <li>1- Sito Web "Sicurezza elettrica", Ing. Vito Barone, Docente di Elettronica all'I.I.S.S. De Nora, Altamura (BA), 2005.</li> <li>2- L. A. Catalano e M. Napoletano. "Motori idraulici volumetrici e trasmissioni idrostatiche", 1999.</li> <li>3- Antonio Arrivo - Vittorio Panaro. "Lezioni di meccanica agraria", Edizioni Quadrifoglio – Bari, 2000.</li> <li>4- P.J. Fellows, "Food processing technology, principles and practice", CRC Press, Boca Raton Boston New York Washinton, DC, 2000.</li> <li>5- Peri C. e Zanoni B., "Manuale di Tecnologie Alimentari I", Parte. 1, 2 e 3, CUSL, Milano, 1994.</li> <li>6- Alfa-Laval. <i>Dairy Handbook</i>. Alfa-Laval, Food Engineering AB. P.O. Box 65, S-221 00 Lund, Sweden.</li> </ol>
Notes	Supplementary materials (periodically updated) are enclosed with a bibliography in which specific publications and other texts are recalled to deepen each topic.
Teaching methods	Lectures will be presented through PC assisted tools (Powerpoint). Lecture notes and educational supplies will be provided by means of email or online platforms (i.e.: Edmodo, Google Drive...)
Evaluation methods	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). Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first

	<p>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 A of the Academic Regulations for the Bachelor Degree in Food Science and Technology.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
<p>Evaluation criteria</p>	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Description of the sequence of machines constituting the plants studied during the course;</li> <li>○ Description of the layout of the purification plants studied during the course;</li> <li>○ Description of the work of the machines studied during the course;</li> <li>○ Description of the layouts studied during the course.</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Machine selection criteria and layout according to the examples presented as case studies;</li> <li>○ Making of machine sizing calculations using the methods of theoretical-practical lessons and exercises.</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ Proposals of changes in layouts based on the quantitative, qualitative and ecological requirements of the studied transformations.</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Ability to develop relationships and professional collaborations.</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Ability to extend the acquired knowledge to untreated food lay out and processes.</li> </ul>
<p>Receiving times</p>	<p>Monday-Friday by previous agreement by e-mail</p>