

General Information	
Academic subject	Food processing plants (I.C. Agro-food processing plants)
Degree course	Food Science and Technology
Curriculum	all
ECTS credits	6
Compulsory attendance	NO
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Alessandro Leone	alessandro.leone@uniba.it	AGR09

ECTS credits details			ETCs
Basic teaching activities	4 ECTS Lectures	2 ECTS class and field exercises, site visits	

Class schedule	
Period	Second semester
Year	2021-2022
Type of class	Lectures, class and field exercises, site visits

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

Academic calendar	
Class begins	01/03/22
Class ends	17/06/22

Syllabus	
Prerequisites/requirements	
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Mastery of logical and cognitive tools to understand the main transformation processes of the food industry and the combination: production process - product quality; ○ Knowledge of the criteria for the use of machines and plants for food processing and storage. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Knowledge of the influence of the technical solutions adopted on crops and breeding on the quality of raw materials; ○ knowledge of the main dimensional, constructive and design aspects of the food industries; ○ understanding of structure-function relationships in food systems and their changes in processes; ○ risk analysis for food machines. <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Ability to correctly carry out the research for mechanical and plant solutions that are appropriate to change the characteristics and quality of foodstuffs; ○ ability to correctly guide the choice of suitable technical solutions to monitor the characteristics and quality of food products during processing; ○ 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. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to establish a professional dialogue with other professionals and operators in the industry, with particular reference to the basic design

	<p>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"> ○ Ability to develop and update knowledges of machines and plants for primary products, wastewater purification, waste management and by-product recovering. <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	<p>Presentation of the course and brief history of the food plants</p> <ul style="list-style-type: none"> • Introduction: the disciplines of “Food processing plants” • machine, general equation and machine performance, classifications of machines (simple machines, complex machines and electric machines) • Force resisting • Fuel energies and general characteristics • Mechanical and pneumatic transmissions • Pumps, fans, compressors and vacuum pumps • Endothermic engine: (operating principle, constituent parts, Otto and Diesel thermal cycles. • Equipment and machines for olive oil processing • Equipment and machines for wine processing • Equipment and machines for dairy processing <p>Working times. Working capacity of food industry machinery. Labour productivity.</p>
Course program	
Bibliography	<ul style="list-style-type: none"> ○ Lecture notes. ○ P. De Vita, G. De Vita. “MANUALE DI MECCANICA ENOLOGICA”. ULRICO HOEPLI MILANO (2007). ○ THE EXTRA-VIRGIN OLIVE OIL HANDBOOK (John Wiley & Sons, Ltd. 2014). <p>Alfa-Laval. Dairy Handbook. Alfa-Laval, Food Engineering AB. P.O. Box 65, S-221 00 Lund, Sweden.</p>
Notes	The texts are reference both for theoretical and practical aspects.
Teaching methods	The course topics will be explained by using Power Point presentations.
Assessment methods (indicate at least the type written, oral, other)	<p>A partial check is planned for students on going with the course year in which the teaching is carried out. This check consists of an oral test pertinent to topics developed during the theoretical lessons and exercise carried out until the date of the check. The outcome of this check contributes to the evaluation of the final attainment and is valid for one academic year. The evaluation of the students’ accomplishment is expressed by a vote of thirty. The partial check is passed with a vote of at least 18/30.</p> <p>The final exam consists of an oral test concerning the topics developed during the theoretical and practice lessons. The evaluation of the students’ accomplishment is expressed by a vote of thirty. The final exam is passed with a vote of at least 18/30.</p> <p>For students who were undergone the partial check, the final evaluation is expressed by the average of the votes obtained in the two oral tests. A first class degree can be attributed in the case of top vote (30/30).</p> <p>The oral examinations are public.</p> <p>The evaluation of the student’s attainment is in agreement with pre-established criteria, as detailed in Annex A of the Academic Regulations for the Agricultural Technologies and Science Degree Course.</p>
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.	<ul style="list-style-type: none"> • <i>Knowledge and comprehension ability</i> <ul style="list-style-type: none"> ○ Description of the sequence of machines constituting the plants studied during the course; ○ Description of the layout of the purification plants studied during the course; ○ Description of the work of the machines studied during the course;

	<ul style="list-style-type: none"> ○ Description of the layouts studied during the course. ● <i>Knowledge and applied comprehension ability</i> <ul style="list-style-type: none"> ○ Machine selection criteria and layout according to the examples presented as case studies; ○ Making of machine sizing calculations using the methods of theoretical-practical lessons and exercises. ● <i>Autonomy of judgement</i> <ul style="list-style-type: none"> ○ Proposals of changes in layouts based on the quantitative, qualitative and ecological requirements of the studied transformations. ● <i>Communication skills</i> <ul style="list-style-type: none"> ○ Ability to develop relationships and professional collaborations. ● <i>Learning ability</i> <ul style="list-style-type: none"> ○ Ability to extend the acquired knowledge to untreated food layout and processes.
Further information	Visiting hours: Monday-Friday from 10.00 to 12.00 by appointment

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