

COURSE OF STUDY *Master degree: Food Science and Technology (LM70)*
ACADEMIC YEAR 2023-2024
ACADEMIC SUBJECT *Circular economy in food supply chains (3 ECTS) - I.C.
Sustainability of agri-food supply chains (9 ECTS)*

General information	
Year of the course	Second
Academic calendar (starting and ending date)	First semester (September 25 th , 2023 – January 19 th , 2024)
Credits (CFU/ECTS):	3
SSD	Agricultural economics (AGR/01)
Language	Italian
Mode of attendance	No Compulsory

Professor/ Lecturer	
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Department and address	Sezione di Economia Agraria 2° piano, 4a scala del complesso ex Facoltà di Agraria
Virtual room	Teams: cq4pjrd
Office Hours (and modalities: e.g., by appointment, on line, etc.)	From Monday to Friday 16.00-18.00, by appointment only, in presence or on Teams

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
75	16	14	45
CFU/ETCS			
3	2	1	

Learning Objectives	The student will acquire knowledge and skills relating to the circular economy paradigm, the European Union legislation on the circular economy, the analysis of innovation processes and the methods for designing circular business models in the food supply chain, the tools available to companies food to increase competitiveness in a green economy perspective.
Course prerequisites	Base knowledge of production economics and economics and policies of the agro-food system.

Teaching strategies	The teaching activity, divided into theoretical lessons and classroom exercises, represents the main teaching method. The theoretical lessons are supplemented by the illustration of practical examples and case studies. The exercise activities are based on group work for giving a presentation on specific material provided by the teacher or proposed by the students. The topics of the course are covered with the help of Power Point presentations.
Expected learning outcomes in	

terms of	
Knowledge and understanding on:	<ul style="list-style-type: none"> • Knowledge about the principles of environmental economics, the concepts of sustainable development and circular economy. • Understanding the importance of improving the environmental performance as strategic tool for increasing the competitiveness of companies operating in food supply chains.
Applying knowledge and understanding on:	<ul style="list-style-type: none"> • Ability to analyse and assess properly the implementation of circular business models, according to the different structural and organizational contexts of food supply chains.
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to contribute effectively to the solution of complex issues related to the improvement of environmental performance in modern companies operating in the food supply chains. • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate the acquired theoretical concepts in oral and written form, using appropriately the scientific language and the specific lexicon of the circular economy applied to the agri-food system. ○ Ability to discuss effectively on complex issues related to the management of the environmental performances in modern food companies even within a multidisciplinary working group. • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to deepen and update own knowledge about legislation and the European policies for the circular economy. ○ Ability to deepen and update own knowledge about the innovative solutions capable of increasing environmental sustainability and competitiveness of companies operating in food supply chains.
Syllabus	
Content knowledge	<ul style="list-style-type: none"> • Economy and environment: the functioning of markets and the causes of their failure (externalities and public goods), the limits to economic growth, the concept of sustainable development. • Paradigm of the circular economy: main characteristics of current linear agri-food system, potential for transition to a circular agri-food system, indicators for measuring circularity. • Regulatory framework and policies for the circular economy: European action plan, main environmental certifications schemes (Environmental Product Declaration, Product Environmental Footprints, etc.). • Circular business models: definition of business model, the business model canvas and its constituent elements, the process of designing a circular business model.
Texts and readings	<ul style="list-style-type: none"> – Bateman, I., Pearce, D. W., & Turner, K. (2003). <i>Economia ambientale</i>. Il Mulino, Bologna. – MacArthur, F. E. (2019). <i>Cities and circular economy for food</i>. Ellen Macarthur Foundation. – Osterwalder, A., & Pigneur, Y. (2020). <i>Creare modelli di business: Un manuale pratico ed efficace per ispirare chi deve creare o innovare un modello di business</i>. Edizioni Lswr. – Lecture notes and lecture materials provided during the course.
Notes, additional materials	<ul style="list-style-type: none"> • Scientific papers • Kovacic, Z., Strand, R., & Völker, T. (2019). <i>The circular economy in Europe: Critical perspectives on policies and imaginaries</i>. Routledge.
Repository	All teaching material will be available to students on web platforms (class Teams code cq4pjrd)

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, as reported in the Academic Regulations for the Master Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may take a middle-term exam, which consists of a written test with both closed-ended and open-ended questions. The middle-term exam lasts one hour and will be evaluated out of thirty. In case of a positive outcome of the middle-term exam (a grade equal or higher than 18/30), the final exam will consist of an oral dissertation concerning the remaining part of the teaching program. The final grade will be calculated as the average of the grade of the middle-term exam and the grade of the final exam.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Assessment criteria	<ul style="list-style-type: none"> ● Knowledge and understanding <ul style="list-style-type: none"> ○ Being able to argue the principles of environmental economics, the concepts of sustainable development and circular economy with reference to the agri-food system. ○ Being able to argue the importance of improving environmental performance as a strategic tool for increasing the competitiveness of food businesses. ● Applying knowledge and understanding <ul style="list-style-type: none"> ○ Being able to correctly contextualize real issues related to the implementation of business models capable of increasing the circularity of agri-food companies. ● Autonomy of judgment <ul style="list-style-type: none"> ○ Making reasonable hypotheses for solving possible problems related to the improvement of environmental performances in companies operating in food supply chains. ● Communicating knowledge and understanding <ul style="list-style-type: none"> ○ Using technical language properly and correctly in discussing issues related to the management of environmental performances in companies operating in food supply chains. ● Communication skills <ul style="list-style-type: none"> ○ Using an appropriate and correct technical language in the discussion of issues relating to the management of environmental performance in companies operating in the food supply chain. ● Capacities to continue learning <ul style="list-style-type: none"> ○ Ability to apply the skills acquired to acquire new knowledge useful for the management of environmental problems in companies operating in the food supply chain.
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	
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