UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2023/2024
MASTER'S DEGREE (MSC)	MANAGEMENT ENGINEERING
SUBJECT	SUPPLY CHAIN MANAGEMENT
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50368-Ingegneria gestionale
CODE	14368
SCIENTIFIC SECTOR(S)	ING-IND/17
HEAD PROFESSOR(S)	AIELLO GIUSEPPE Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	144
COURSE ACTIVITY (Hrs)	81
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**AIELLO GIUSEPPE** Monday 10:00 13:00 Dicgim Ed.9 - stanza personale

PREREQUISITES	The course has no specific pre-requisites.
LEARNING OUTCOMES	Knowledge and understanding: The students will develop knowledge and clear understanding of the key issues related to the field of the circular economy. Students will be able to understand circular economy models; to have an overview of the main dynamics related to the circular economy issues; define new business ideas of circular systems. Comprehension and ability to apply knowledge Upon completing the study program, students will learn to use a multidisciplinary approach and apply their knowledge to reach solutions based on circular economy. The students will be develop a systemic way of thinking, which supports their understanding of complex situations and capacity to develop problem-solving skills. Upon completing the study program, students will learn how to effectively communicate and work, as an expert in circular economy issues. Making judgments Upon completing the study program, students will be able to present an informed scientific opinion in the public debate concerning the circular economy. Students will acquire the ability to gather and interpret information and data from different sources, in order to make judgements in an independent way. Moreover, students will be able to prepare original research supported by relevant bibliography and data analysis and debate different perspectives to address circular economy issues. Communication skills Students will be able to develop the ability to communicate in written form through completing the case studies discussions, and in oral form through the final presentation of the project work and the class debate. Moreover, the students will be able to use the notions and the communication of circular economy. Learning ability Upon completing the study program, students will be able to build an analytic toolbox from the analysis of complex economic processes which involves the application of new circular models, and to solve problems in dynamics settings and develop critical positions.
ASSESSMENT METHODS	Evaluation of student performance in this course will be based on group project, case study discussion, active learning activity and oral exam. Distribution of grades is based on the following percentages: 30%: Project work (teamwork) 20%: Case study discussions (teamwork) 20%: Active learning activity 30%: Oral exam The assessment of knowledge, competences, and applicative capabilities consists of a project group related on a real business challenge in the field of the circular economy and will count for 30% of the total grade; discussions in class of case studies on the main circular economy models will count for the 20%; the oral exam will count for 30% of the total grade. The best way to learn is by teaching so the active learning activity is designed to do that. Briefly, the student will pick a topic that applies the circular economy paradigm, and it is of her/his special interest. She/he will then conduct some background research on it, and share her/his findings with the class conducting a real lecture of 15-20 min. The student assessment is evaluated using the following grades: Excellent 30-30 cum laude. The student shows excellent knowledge of the topics of the course, excellent language and communication skills, excellent ability to analyze the issues related to the core topics of circular economy, excellent ability to understand real arguments in the settings of the course, excellent ability to connect the topics among them and to develop critical analysis in the field of circular economy. Cum Laude grade is assigned to those students who show a brilliant and well above average ability to sustain a discussion on the core topics of circular economy. Very good 26-29. The student shows very good knowledge of the topics of the course, very good language and communication skills, very good ability to analyze the issues related to the core topics of circular economy, very good ability to understand real arguments in the settings of the course, very good ability to connect the topics among them and to develop critical analysis in the field of circular economy. Good 24-25. The student shows good knowledge of the topics of the course, good language and communication skills, good ability to analyze the issues related to the core topics of circular economy, good ability to understand real arguments in the settings of the course, good ability to connect the topics among them and to develop critical analysis in the field of circular economy. Satisfactory 21-23. The student shows satisfactory knowledge of the topics of the course, satisfactory language and communication skills, satisfactory ability to analyze the issues related to the core topics of circular economy, satisfactory ability to understand real arguments in the settings of the course, satisfactory

	ability to connect the topics among them and to develop critical analysis in the field of circular economy. Sufficient18-20. The student shows sufficient knowledge of the topics of the course, sufficient language and communication skills, sufficient ability to analyze the issues related to the core topics of circular economy. The student does not show the ability to understand real arguments in the settings of the course, the ability to connect the topics among them and to develop critical analysis in the field of circular economy. Insufficient. The student show he/she has not reached the minimum knowledge of the topics of the course and shows not satisfactory language and communication skills. The student also shows he/she has not reached a sufficient ability to analyze the issues related to the core topics of circular economy. The final grade is the weighted average of the assessments obtained in the three modules.
EDUCATIONAL OBJECTIVES	The course aims at providing managerial insights on the design and management of sustainable supply chains and distribution systems, coherently with the modern paradigms of the circular economy and ecological transition. The course will focus in particular on modern optimized approaches to managing the flows of goods within the supply chain and in the final last mile delivery operations, which constitute the most critical element of the entire distribution chain. The course will provide the managers of the futures with adequate skills to face the new challenges of supply chain management in a dynamic technological landscape where new electric and hydrogen propulsion systems call for a renewed approach to the design and management of the supply chains.
TEACHING METHODS	Slides will be available before each lesson covering each of the specific topics addressed in the course. Additionally, case studies will be discussed and presented to favor a continuous and engaging learning path. The cases will describe real experiences implementing circular economy paradigm. When applicable, the use of digital technologies will support the learning path, for example, doing online simulations, connecting with practitioners, engaging students through interactive tools.
SUGGESTED BIBLIOGRAPHY	Sustainable Supply Chains: A Research-Based Textbook on Operations and Strategy (Springer Series in Supply Chain Management, 4).

SYLLABUS

Hrs	Frontal teaching
2	Course introduction
4	Fundamentals of supply chain management and performance evaluation
4	Key performance indicators (KPI) for sustainable supply chain management
5	Models for the evaluation of economic environmental and social impact
4	Multi criteria performance evaluation for the assessment of economic, environmental and social performance of supply chains
5	Environmental performance of the supply chain and optimization of the material flows in the supply chain
5	distribution: infrastructures and operations management
5	Sustainable delivery methods, models systems and technologies
5	Sharing Economy and sustainable Logistics - crowdshipping

Hrs	Practice
5	Project Work: Vehicle routing for green supply chains
5	Project Work: Plant Location optimization models for the supply chain

Hrs	Workshops
5	Case study – Analysis and discussion