Syllabus

Descrizione corso

Titolo insegnamento	Digital Transformation and Sustainability Management
Codice insegnamento	47553
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	IEGE-01/A
Lingua	Inglese
Corso di Studio	Corso di laurea magistrale in Ingegneria Industriale Meccanica
Altri Corsi di Studio (mutuati)	
Docenti	dott. Margherita Molinaro, Margherita.Molinaro@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/43550
Assistente	
Semestre	Secondo semestre
Anno/i di corso	1
CFU	5
Ore didattica frontale	28
Ore di laboratorio	18
Ore di studio individuale	79
Ore di ricevimento previste	
Sintesi contenuti	The course provides insights into the developments towards digital transformation and sustainability that are disruptively changing existing patterns of manufacturing and logistics. First, students will be guided in the adoption of a managerial view to understand digital transformation through a discussion of different digital technologies, new business models, implementation drivers, challenges, and barriers. Second, they will be able to understand key topics related to sustainability management, including its relationship with the digitalization strategy, through a discussion of solutions to implement, measure

	and report sustainability. Overall, the acquired knowledge will enable industrial and mechanical engineers to analyze and influence the developments determining the changing boundary conditions of manufacturing and logistics systems.
Argomenti dell'insegnamento	PART 1: DIGITAL TRANSFORMATION Introduction to digital transformation • The Fourth Industrial Revolution • Digital technologies and disruptions • Digital strategy The digital transformation framework • Digital business processes: Impact on operations and supply chain management • Digital business models: Impact on business scope • Organizational design for digital change • Managing the digital transformation: a roadmap Drivers, barriers and impacts of digital transformation • Drivers and barriers of digital transformation • Desired and undesired effects of digital transformation PART 2 : SUSTAINABILITY MANAGEMENT Introduction to sustainability • The history of sustainability • Sustainability and its components • Circular economy Sustainability implementation • Sustainability certifications • Sustainable business models and practices • Industry 4.0 and sustainability Sustainability measurement and reporting • Sustainability Reports: GRI framework and other reporting standards • European regulations • Tools for sustainability assessment: introduction to Carbon

	Footprint Analysis and Life Cycle Assessment
Parole chiave	Industry 4.0; digital business models; circular business models; sustainability measurement; sustainability reporting;
Prerequisiti	None.
Insegnamenti propedeutici	
Modalità di insegnamento	Frontal lectures and exercises.
Obbligo di frequenza	Strongly recommended.
Obiettivi formativi specifici e risultati di apprendimento attesi	Learning outcomes: Knowledge and understanding: • Advanced understanding of Digital Transformation and Sustainability Management concepts • Knowledge of the various tasks, methods and approaches of managing production networks regarding digital transformation and sustainability • Knowledge of the management models for digital transformation and sustainability management Applying knowledge and understanding: • Ability to adjust illustrative business models considering digital transformation and sustainability • Ability to adjust illustrative production networks considering digital transformation and sustainability Making judgements: • Ability to transfer the knowledge and methods learned to real practical applications thanks to groupworks and exercises • Systems Thinking – ability to judge the influences of digital transformation and sustainability on current and future production networks Communication skills: • Ability to prepare, conduct and join interactive discussions in class • Ability to structure, prepare, and present arguments related to digital transformation and sustainability management topics Learning skills:

	• Ability to autonomously extend the knowledge acquired during the study course by reading and understanding.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	Written exam and case study presentations.
Criteri di valutazione	The mark is calculated from the results of the written exam and the case studies of both parts of the course (Digital Transformation and Sustainability Management). The written exam counts 70% and the case studies count 30% of the final grade. The following criteria are taken into consideration for the assignment of marks: • Ability to solve simple exercises about the topics of the course • Clarity of answers • Mastery of specialistic terminology (also with respect to teaching language) • Ability to summarize and establish relationships between topics.
Bibliografia obbligatoria	Lecture notes and documents for exercises will be available on the Microsoft Teams and the Open Learning Environment (OLE) pages of the course.
Bibliografia facoltativa	**Part 1: Digital Transformation** • Gupta, S. (2018). *Driving digital strategy: A guide to reimagining your business*. Harvard Business Press. • Hinterhuber, A., Vescovi, T., & Checchinato, F. (Eds.). (2021). *Managing digital transformation: Understanding the strategic process*. Routledge. • Rüßmann, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P., & Harnisch, M. (2015). Industry 4.0: The future of productivity and growth in manufacturing industries. *Boston consulting group*, 9 (1), 54-89. **Part 2: Sustainability Management** • Lacy, P., Long, J., & Spindler, W. (2020). *The Circular Economy Handbook*. Palgrave Macmillan, London.

	• GRI Standard Ed. 2021 (https://www.globalreporting.org/) • https://ellenmacarthurfoundation.org/
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	Buona occupazione e crescita economica, Lotta contro il cambiamento climatico, Utilizzo responsabile delle risorse, Innovazione e infrastrutture