Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Digital Transformation and Sustainability Management
Code der Lehrveranstaltung	47553
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	IEGE-01/A
Sprache	Englisch
Studiengang	Master in Industrie- und Maschineningenieurwesen
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Dott. Margherita Molinaro, Margherita.Molinaro@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/43550
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Zweites Semester
Studienjahr/e	1
KP	5
Vorlesungsstunden	28
Laboratoriumsstunden	18
Stunden für individuelles Studium	79
Vorgesehene Sprechzeiten	
Inhaltsangabe	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.
Themen der Lehrveranstaltung	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
Stichwörter	Industry 4.0; digital business models; circular business models; sustainability measurement; sustainability reporting;
Empfohlene Voraussetzungen	None.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Frontal lectures and exercises.
Anwesenheitspflicht	Strongly recommended.
Spezifische Bildungsziele und erwartete Lernergebnisse	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.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Written exam and case study presentations.
Bewertungskriterien	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.
Pflichtliteratur	Lecture notes and documents for exercises will be available on the Microsoft Teams and the Open Learning Environment (OLE) pages of the course.
Weiterführende Literatur	**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/
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Menschenwürdige Arbeit und Wirtschaftswachstum, Maßnahmen zum Klimaschutz, Nachhaltiger Konsum und Produktion, Industrie, Innovation und Infrastruktur