Syllabus

Course Description

Course Title	Innovation oriented and sustainable management in manufacturing companies
Course Code	42190
Course Title Additional	
Scientific-Disciplinary Sector	
Language	German
Degree Course	Bachelor in Industrial and Mechanical Engineering
Other Degree Courses (Loaned)	
Lecturers	Prof. Dr.-Ing. Dominik Matt, Dominik.Matt@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/492
Teaching Assistant	
Semester	First semester
Course Year/s	Opt.
CP	3
Teaching Hours	24
Lab Hours	0
Individual Study Hours	51
Planned Office Hours	
Contents Summary	The course is part of the scientific and didactic sector in "Manufacturing Technology and Systems" and "Industrial Mechanical Plants" and is offered as optional course within the Bachelor in Industrial and Mechanical Engineering. It aims at teaching both scientific foundations and practical methods and helps to develop specific professional skills. The aim of this course is to provide an overview of important practices, concepts, methods and techniques of holistic innovation-oriented corporate management, from product idea to the various

	productive and logistical elements of the value chain through to successful commercialization.
Course Topics	The lecture belongs to the scientific fields of production systems and technologies, as well as industrial plants, and is offered as an elective course for the Bachelor's program in Industrial and Mechanical Engineering. The course aims to convey general scientific methods and content, as well as specific professional competences. The objective of this course is to provide an overview of important approaches, concepts, methods, and techniques of holistic, innovation-oriented corporate management—from the product idea, through the various productive and logistical stages of the value chain, up to successful marketing. The following topics are among those covered in the lecture: • Fundamentals of innovation management • Different types of innovation • Mechanisms of successful corporate growth • Design and optimization of innovation processes • Fundamentals of digital innovation (twin transition) • Introduction to work preparation and quality management • Fundamentals of sustainable manufacturing and assembly • Introduction to technical project management
Keywords	Innovation Management, Twin Transition, Technical Project Management
Recommended Prerequisites	No.
Propaedeutic Courses	
Teaching Format	Frontal lectures with practical illustrative examples in the Smart Mini Factory laboratory.
Mandatory Attendance	Yes.
Specific Educational Objectives and Learning Outcomes	Knowledge and understanding 1. Knowledge of modern methods and techniques of successful product and process innovation. Applying knowledge and understanding 2. Development of practical skills in dealing with methods and

	techniques of product and process innovation through the illustration of the theoretical basics by examples from practice. Making judgements 3. Basic understanding of the timely and target-oriented planning and implementation of innovation projects and for individual working, structuring and documentation of innovative problem solutions using modern technologies for information acquisition and processing. Communication skills 4. Basic understanding of the structured illustration and presentation of innovation oriented project activities. Learning skills 5. To extend the knowledge acquired during the study course by reading and understanding scientific and technical documentation.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	- Formative assessment: Summary after the lecture: after every lecture; ILOs assessed: 1, 2, 3, 4, 5; Laboratory visit: Exercises in the lab for 8h; ILOs assessed: 2. - Summative assessment: 40% written examination with multiple choice questions: ca. 12 Multiple Choice questions; ILOs assessed: 1, 3, 5; 60% written examination with theory and exercises: ca. 4 theory questions; ILOs assessed: 1, 2, 3, 5.
Evaluation Criteria	Final evaluation by a single final grade. The final grade is calculated 100% from the results of the written exam. Criteria for the evaluation of the written examination: completeness and correctness of the answers.
Required Readings	There is no single text that completely covers the entire contents of

	the course. The course material is collected from various textbooks and research paper.
Supplementary Readings	Will be indicated during the lecture course.
Further Information	
Sustainable Development Goals (SDGs)	Quality education, Responsible consumption and production, Industry, innovation and infrastructure

Course Module

Course Constituent Title	Innovation management and sustainable production
Course Code	42190A
Scientific-Disciplinary Sector	IIND-04/A
Language	German
Lecturers	Prof. Dr. Erwin Rauch, Erwin.Rauch@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/17786 Prof. Dr.-Ing. Dominik Matt, Dominik.Matt@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/492
Teaching Assistant	
Semester	First semester
CP	2
Responsible Lecturer	
Teaching Hours	24
Lab Hours	0
Individual Study Hours	26
Planned Office Hours	
Contents Summary	• Fundamentals of innovation management • Different types of innovation • Mechanisms of successful company growth • Design and optimisation of innovation processes • Basics of digital innovation (Twin Transition) • Introduction to work preparation and quality management

	• Basics of sustainable production and assembly • Introduction to technical project management
Course Topics	This course provides a concise overview of innovation management fundamentals and key concepts of sustainable management in industrial companies. It covers types of innovation, innovation processes, sustainability, circular economy principles, sustainable manufacturing, and the 10 R principles. A simple life cycle assessment example illustrates practical application.
Teaching Format	Frontal lectures with practical illustrative examples in the Smart Mini Factory laboratory.
Required Readings	There is no single text that completely covers the entire contents of the course. The course material is collected from various textbooks and research paper.
Supplementary Readings	Will be indicated during the lecture course.

Course Module

Course Constituent Title	Technical project management
Course Code	42190B
Scientific-Disciplinary Sector	IIND-05/A
Language	German
Lecturers	Prof. Patrick Dallasega, Patrick.Dallasega@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/33073
Teaching Assistant	
Semester	First semester
CP	1
Responsible Lecturer	
Teaching Hours	8
Lab Hours	0
Individual Study Hours	17
Planned Office Hours	3
Contents Summary	• Fundamentals of innovation management

	• Different types of innovation • Mechanisms of successful company growth • Design and optimisation of innovation processes • Basics of digital innovation (Twin Transition) • Introduction to work preparation and quality management • Basics of sustainable production and assembly • Introduction to technical project management
Course Topics	
Teaching Format	Frontal lectures with practical illustrative examples in the Smart Mini Factory laboratory and Extended Reality laboratory
Required Readings	The required reading for the lecture will be published on MS Teams.
Supplementary Readings	1) Project Management Institute (PMI) – PMBOK www.pmi.org PMBOK® Guide – Sixth Edition, 2017 (available in the library of Unibz) 2) De Marco, A. (2011). "Project Management for Facility Constructions", Springer Science & Business Media 3) Meredith, J.; Mantel, S. and Shafer, S. (2016) "Project Management: A managerial Approach", J. Wiley & Sons Singapore (available in the library of Unibz) 4) Cantamessa, M., Cobos, E., Rafele, C., (2007) "Il Project Management – Un approccio sistemico alla gestione dei progetti", ISEDI De Agostini 5) Project Management for Construction" by Hendrickson http://www.ce.cmu.edu/pmbook/ (free available)