

Syllabus

Course Description

Course Title	Product development and design
Course Code	47585
Course Title Additional	
Scientific-Disciplinary Sector	
Language	English
Degree Course	Master in Industrial Mechanical Engineering
Other Degree Courses (Loaned)	
Lecturers	Dott. Margherita Molinaro, Margherita.Molinaro@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/43550 dr. Aurora Berni, Aurora.Berni@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/42284
Teaching Assistant	
Semester	First semester
Course Year/s	2
CP	6
Teaching Hours	32
Lab Hours	24
Individual Study Hours	80
Planned Office Hours	18
Contents Summary	The course provides insights into the new trends in product development and design. First, students will be guided in the adoption of a managerial view to understand how to structure an innovation process and how to incorporate the Voice of the Customer (VOC) in new product development decisions. Furthermore, they will learn how to investigate the patterns of consumer decision making through

	market research, thus better understanding the utility and desirability of new products. Second, they will be able to understand an engineering view of designing industrial products. Here, students will learn best practices in generation of new product concepts and their subsequent evaluation, which will take place by means of state-of-the-art systems and methods.
Course Topics	Module 1 - Product Development: • The concept of innovation • New product development processes and models • Forecasting techniques for new products • Quality Function Deployment • Conjoint Analysis Module 2 - Engineering and Product Design: • Engineering design cycles • Product planning and specifications • Conceptual design • Design creativity and assessment thereof • Human-product interaction • User Experience • Eye-tracking in design research
Keywords	product development; customer needs; engineering design; human-product interaction
Recommended Prerequisites	none
Propaedeutic Courses	
Teaching Format	Frontal lectures, exercises, laboratory and experimental activities
Mandatory Attendance	Not mandatory, but highly recommended
Specific Educational Objectives and Learning Outcomes	Intended Learning Outcomes (ILO) Knowledge and understanding Students should acquire the knowledge and the understanding of: • New product development process and related concepts • Essential tools and methods for customer involvement in new product development • Tools and approaches for market research in new product development • Engineering design cycles

	• Creative conceptual design • User Experience in engineering and product design • Systems to test human-product interaction Applying knowledge and understanding • Ability to frame a product development process and its governance structure • Ability to apply the Quality Function Deployment tool to a simple product • Ability to properly design a Conjoint Analysis • Ability to understand the main drivers behind product development and design • Ability to meditate about concepts instead of rushing to solutions • Ability to identify the main elements to be tested to allow the appraisal of design ideas and new products • Ability to organize tests aimed to evaluate people's experience with new products Making judgements • Ability to transfer the knowledge and methods learned to real practical applications thanks to groupworks, exercises and simulation of experimental activities within product development and design Communication skills • Ability to prepare, conduct and join interactive discussions in class • Ability to structure, prepare, and present arguments related to product development and design Ability to learn • Ability to autonomously extend the knowledge acquired during the study course by reading and understanding
Specific Educational Objectives and Learning Outcomes (additional info.)	-
Assessment	Module 1 is assessed through a project-based work, carried out in groups. The assessment includes a short individual oral discussion

	aimed at verifying the understanding of the concepts and methods covered in the module and the individual contribution to the project. Module 2 is assessed through a written examination lasting 1.5 hours. The final grade is calculated as the arithmetic mean of the grades obtained in the two modules, each expressed on a 30-point scale.
Evaluation Criteria	The assessment of the project-based work (Module 1) will be based on: • Quality and coherence of the project and problem framing • Appropriate and correct application of the methods introduced in the course • Quality of data analysis, interpretation, and resulting recommendations • Clarity of the work and individual understanding demonstrated during the oral discussion The written examination (Module 2) will consider: • Ability to accurately illustrate concepts about the topics of the course • Clarity of answers • Mastery of specialistic terminology
Required Readings	Lecture notes and documents for exercises will be available on the Microsoft Teams of the course.
Supplementary Readings	Books and articles will be possibly suggested by the lecturers during the course.
Further Information	-
Sustainable Development Goals (SDGs)	Responsible consumption and production, Industry, innovation and infrastructure

Course Module

Course Constituent Title	Product Development
Course Code	47585A

Scientific-Disciplinary Sector	IEGE-01/A
Language	English
Lecturers	Dott. Margherita Molinaro, Margherita.Molinaro@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/43550
Teaching Assistant	
Semester	First semester
CP	3
Responsible Lecturer	
Teaching Hours	16
Lab Hours	12
Individual Study Hours	40
Planned Office Hours	9
Contents Summary	The course provides insights into the new trends in product development and design. First, students will be guided in the adoption of a managerial view to understand how to structure an innovation process and how to incorporate the Voice of the Customer (VOC) in new product development decisions. Furthermore, they will learn how to investigate the patterns of consumer decision making through market research, thus better understanding the utility and desirability of new products. Second, they will be able to understand an engineering view of designing industrial products. Here, students will learn best practices in generation of new product concepts and their subsequent evaluation, which will take place by means of state-of-the-art systems and methods.
Course Topics	Module 1 - Product Development: • The concept of innovation • New product development processes and models • Forecasting techniques for new products • Quality Function Deployment • Conjoint Analysis
Teaching Format	Frontal lectures and exercises

Required Readings	-
Supplementary Readings	-

Course Module

Course Constituent Title	Engineering and Product Design
Course Code	47585B
Scientific-Disciplinary Sector	IIND-03/B
Language	English
Lecturers	dr. Aurora Berni, Aurora.Berni@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/42284
Teaching Assistant	
Semester	First semester
CP	3
Responsible Lecturer	
Teaching Hours	16
Lab Hours	12
Individual Study Hours	40
Planned Office Hours	9
Contents Summary	The course provides insights into the new trends in product development and design. First, students will be guided in the adoption of a managerial view to understand how to structure an innovation process and how to incorporate the Voice of the Customer (VOC) in new product development decisions. Furthermore, they will learn how to investigate the patterns of consumer decision making through market research, thus better understanding the utility and desirability of new products. Second, they will be able to understand an engineering view of designing industrial products. Here, students will learn best practices in generation of new product concepts and their subsequent evaluation, which will take place by means of state-of-the-art systems and methods

Course Topics	Module 2 - Engineering and Product Design: • Engineering design cycles • Product planning and specifications • Conceptual design • Design creativity and assessment thereof • Human-product interaction • User Experience • Eye-tracking in design research
Teaching Format	Frontal lectures, laboratory and experimental activities
Required Readings	-
Supplementary Readings	-