Business PF
Business School
Fakultät für Wirtschaft und Recht
Hochschule Pforzheim

HS PF

Syllabus
MLICS5107 Sustainable Innovation Management
Prof. Dr.-Ing. Claus Lang-Koetz
Winter Semester 2023/24

Level	Master	
Credits	3	
Student Contact Hours	2	
Workload	90 hours	
Prerequisites	-	
Time	See LSF	
Room	See LSF	
Start Date	See LSF	
Lecturer	**Name**	Prof. Dr.-Ing. Claus Lang-Koetz
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Outline of the Course

The students are taught the underlying concepts of sustainable innovation management, the respective theoretic background, practical application and relevance for companies. The lecture is a mixture of a classical lecture by the professor, group discussions and seminar. Concepts, process and methods are taught, seminar topics are researched and presented by the students. At the end, the results are delivered in a presentation and a written seminar paper.

The students learn how a sustainable innovation management can be built up in a company and which methods can be used for it. This comprises of activities for strategic planning, the generation of ideas, their assessment and selection, followed by their implementation into products and processes suitable for the market (see also preliminary schedule below). These “conventional” activities are enhanced by sustainability aspects, e.g. relevance of sustainable development for companies, basic concepts of sustainability management, the concept of life cycle thinking, eco-design principles, methods to reduce greenhouse gas emissions and to implement circular economy business models.

A special focus is put on a strategic component (working with market and technology trends and future scenarios), the sources of innovations (taking open innovation approaches and collaboration with other organizations into account) and how to deal with ideas in the company and how to implement them (assessment and selection, technical implementation and market launch). A further focus lies on the integration of sustainability aspects in conventional innovation management.

The course consists of lectures in order to convey concepts, processes and methods, group discussions and working independently (in groups) on case studies on innovation strategy and innovation management with a sustainability focus.

In this semester, the case study topics will be provided by the company LAPP, global market leader for integrated connection systems based in Stuttgart. The focus of the case study is on obtaining innovation ideas for circular economy.

Course Intended Learning Outcomes and their Contribution to Program Intended Learning Outcomes / Program Goals

Program Intended Learning Outcomes		Course Intended Learning Outcomes	Assessment Methods	
	After completion of the program the students will be able…	After completion of the course the students will be able…	Presentation	Term Paper
			70%	30%
			Individual	Individual
1	**Responsible Leadership in Organizational Contexts**			
1.1	…to demonstrate their sound knowledge of theories and concepts of corporate sustainability and industrial ecology.	- explain the basic concepts of technology & innovation management, their relevance for companies and sustainable development and the most important concepts, methods and process, - display how creativity and openness for new topics and ideas on the one hand and a well-structured methodological procedure on the other hand can contribute to the implementation of successful and sustainable innovations,	X	X
1.2	...to expertly apply corporate sustainability and industrial ecology theories and concepts to organizational contexts.	- apply concepts to integrate sustainability aspects into innovation management, its methods, processes and tools, - link company topics (such as sales, marketing, production, development, …) to innovation management,	X	X
2	**Creative Problem Solving Skills in a Complex Business Environment**			
2.3	…to develop creative solutions to complex problems of corporate sustainability and industrial ecology	- to apply selected concepts and methods to practical examples and know their strengths and weaknesses,	X	X
2.4	…to communicate solutions in the field of corporate sustainability and industrial ecology.	- to present their solution approaches and results in a convincing way	X	X
3	**Applied Research Skills**			
4	**Life Cycle Thinking and Interdisciplinarity**			
4.4	…to critically reflect the interaction of economic, technical, ecological and social aspects in their analyses and evaluations.	- assume different perspectives while discussing their results in a critical manner.	X	X

Teaching and Learning Approach

The course is organized as a lecture with seminar / case study elements. Throughout the course special emphasis is met on discussion and interaction with the students. We will critically discuss the theory, its practical application and its implications for use in an industrial company. An emphasis will be put on case study topic with high practical relevance.

Students will have to work independently in groups with the case studies provided (with a focus on different topics to be specified in class) and present their results in class.

The materials – slides and questions & problems – will be distributed to the students on the e-learning platform.

I appreciate the interaction with students in class very much – it helps me to understand your thoughts and it helps you to better understand the topic. I invite you to actively "think along", ask questions and discuss with me in the lecture!

Literature and Course Materials

Recommended literature:

- Lang-Koetz, C.; Reischl, A, ; Fischer, S.; Weber, S.; Kusch, A. (2023): *Ambidextres Innovationsmanagement in KMU - Praxisnahe Konzepte und Methoden*, Springer Gabler, Berlin Heidelberg, available online at https://www.hs-pforzheim.de/im_buch .
- Tidd, J.; Bessant, J. (2015): Managing Innovation: Integrating Technological, Market and Organizational Change, Wiley
- Smith, D. (2009): Exploring Innovation, McGraw-Hill Higher Education; 2nd edition
- Trott, P. (2012): Innovation Management and New Product Development, 5th edition, Financial Times Press
- Spath, D. et al. (2011): Technologiemanagement. Grundlagen, Konzepte, Methoden, Fraunhofer Verlag.
- Selected journal articles (information will be provided later)

Assessment

The grading will be based upon

- A presentation on a case study
- a short paper on the relevant findings from the case study and learnings obtained
- active participation in class discussion

It is based on the following criteria:

- Addressed topic and examined it from different perspectives
- Connections to methods / theories of sustainable innovation management presented
- Plausible explanation of the derivation of results / clear lines of argument
- Professional presentation of results

The following assessment scheme is applied:

- 'sehr gut' represents exceptional work, far above average.
- 'gut' represents good work, above average.
- 'befriedigend' represents average work.
- 'ausreichend' represents below average work with considerable shortcomings.
- and 'mangelhaft' is just work in the wrong direction or with unacceptable shortcomings.

It is my objective to grade everybody in the same, fair way. Equal performances are equally graded, no matter who the person is.

Schedule

The following schedule is planned for the lecture (final schedule to be announced in class):

- Foundations of technology and innovation management
- *Introduction to case study work*

- Foundations of sustainable development and of sustainability management and appropriate concepts and methods for application in the industry
- Future topics of innovation / mega trends
- Innovation strategy and methods to develop an innovation strategy: environment analysis, benchmarking, SWOT, technology and product lifecycle, portfolio Approaches, Technology Readiness Level, Business Model Canvas
- *Q&A session case studies*
- Organization of innovation: the innovation function, innovation Process, in-house innovation activities, Open Innovation, corporate culture and innovation
- *Q&A session case studies*
- Sustainability and innovation: introduction into life cycle thinking, sustainability and innovation in R&D projects and in industrial companies
- *Q&A session case studies*
- Sources of innovation: triggers for innovation, users and their needs, idea generation, creativity and creativity techniques
- *Q&A session case studies*
- Idea assessment and selection: idea assessment in practice, qualitative and quantitative methods, practical example, idea selection
- *Case studies: Presentation of results by students (part 1) and discussion*
- Idea implementation: introduction to product development, approach in product development, technical implementation, prototypes and tests. project management in product development
- Marketing of innovations and market introduction: internal and external innovation communication, market launch
- An integrated perspective on innovation management and sustainability
- *Case studies: Presentation of results by students (part 2) and discussion*

Additional Information

About the lecturer

Claus Lang-Koetz is Professor of Sustainable Technology and Innovation Management at Pforzheim University (since 2014). After completing his studies (Dipl.-Ing. Environmental Protection Engineering), he worked for nine years in applied research at the University of Stuttgart (doctorate in engineering) and at the Fraunhofer Institute for Industrial Engineering IAO in Stuttgart. He then built up and headed innovation management at an internationally active plant engineering company. At Pforzheim University, in addition to his teaching activities, he manages research projects at the Institute for Industrial Ecology (INEC), of which he is deputy director. His research focuses in particular on the design of innovation processes in companies, organizational models and evaluation methods of strategic technology management, and the integration of sustainability aspects into innovation management.