

Course:**BAE 4172 Sustainable Product Development 3**

2 hrs per week, 3 credits

Language: English and German (WuR lecturer German, WI lecturer English)

Level: advanced (B2-C1)

SG WI International, 6. Semester

Location and schedule

COVID 19 Information:

As of August 24, 2020, it is expected that the **lecture** will be held online. Please check the LSF for updates. In case no physical lectures will be held the regular online venue for this lecture will be

<https://app.alfaview.com/#/join/alfaview-technik/c15e2587-db1c-4395-a2f4-1b1478ba456b/a11ad794-74a2-41a7-a631-d8d17c59ed1d> (Room Prof. Woidasky)

The course will start with a block seminar on Monday, October 5, 2020 (11.30 am – 5 pm). This block seminar will cover

- Presentation of the state of the knowledge on the research topics (see below)
- Formation of interdisciplinary research groups
- Methods briefing
- Introduction of external partners including students' Q&A round on research topics.

Lecture and other important dates:

- Monday Oct. 12, 2020 (tbc): Due date for Research Exposé submission
- Friday, November 6, 2020 – Feedback/ test presentation (no grades, for individual groups only. Organise for approx. 1 h slot that date).
- Friday, November 13, 2020 – Final presentation of research results (internal and external partners). Organise for 8 am -5 pm event)
- November 27, 2020 (tbc): Due date for final report submission.

Along with these plenary dates a separate bilateral consultation option will be given on dates to be announced.

An additional feedback meeting will be held after the formal finalization of the project upon separate announcement.

Lecturer:

Prof. Dr.-Ing. Jörg Woidasky

Prof. Dr.-Ing. Claus Lang-Koetz

e-mail: joerg.woidasky@hs-pforzheim.de)

Office hours: Please check office hours appointment list in front of lecturer office T2.214 (please sign in for appointment in list in front of the room)

Please do not hesitate in case you have any questions regarding the course. You are also welcome to make suggestions on the course.

No.	NPE3
1	Introduction, Requirements
2	Business case introduction
3	Group formation, Q&A
4	Project planning and feedback
5	Scientific writing
6	Pre-Presentation Check
7	Final presentation to company partner
8	Feedback rounds

The course will be taught in combination with Prof. Lang-Koetz of the Business School, Resource efficiency program. Joint groups of Resource Efficiency and Industrial Engineering Program Students will be formed. The lecture content will be a real world task from various fields. Table 1 gives an overview on the topics, out of which one has to be selected by each student.

Table 1: Topics/Project overview

<i>Projektthemen</i>	Project topics
<i>A: Festo: Nachhaltigkeit und Image</i>	A: Festo – Sustainability and Image
<i>B: Festo: Sparepart Business und dessen ungenutztes Potenzial</i>	B: Festo – Sparepart business and it unused potential
<i>C: Bosch: Kunststoff-Rezyklat-Normung</i>	C: Bosch: Polymer recycle standards
<i>D: Alpha-Protein: Co-Recycling Lebensmittelabfälle und Verpackungskunststoffe</i>	D: Alpha-Protein: Co-Recycling of food and polymer packaging waste
<i>E: Überregionale Stoffströme – Potenzialanalyse Nordschwarzwald</i>	E: Supra-regional material flows: Norther Black forest potential analysis
<i>F: Innovationsidee zur Unkraut-Vernichtung</i>	F: Innovative idea for weed control

The task will be jointly worked on in the groups, and supported and coached by the lecturers. Thus the consultation dates form a crucial part of the entire lecture process.

This class due to the cooperation of two study programs will be held in a fast track mode, so it will be finalized by mid-semester.

Overview (catalogue description):

During this seminar, students use a practical business example to apply procedures for product and market development and product assessment with regard to sustainability requirements.

The company representatives will both present his or her challenges from a business point of view, and will attend the final presentation round.

Prerequisites:

You should have attended Sustainable Product Development 1 and 2 lectures, and have a good command over the English language.

Learning Objectives:

After completing this course students

- know the stage-gate development process
- have learned about sustainability requirements for products in practical business life
- have developed or matured a product meeting sustainability requirements
- are able to present their works results orally and in writing in English

Course topics:

- Introduction and implication of product design in businesses
- Business application of sustainability
- Creativity processes
- Innovation in SME
- Quality function deployment.

Teaching and learning approach:

Learning will be achieved through presentation and to a larger extent through group work, discussion, and additional students' presentation.

Contribution to program goals:

	Learning outcome	Contribution	Assessment
1.3	Students demonstrate key knowledge in Business Administration.	Strategic decisions, theories and instruments of International Management	Participation in class + outcome of assignment
1.4	Students demonstrate key knowledge in Economics.	Background to international economics and international trade	Participation in class + outcome of assignment
2.2	Students demonstrate the ability to use information systems effectively in real world business settings.	Research on different countries	Participation in class + outcome of assignment
3.1	Students are able to apply analytical and critical thinking skills to complex problems.	Develop own case study in international business	Class work, presentations
4.1	Students are able to develop business ethics-based strategies and are able to apply them to typical business decision-making problems	Ethical decision making in international management	Discussion in Class + outcome of assignment
5.1	Students demonstrate their ability to express complex issues in writing.	assignments	assignments
5.2	Students demonstrate their oral communication skills in presentations and lectures.	Communication of knowledge in International Management and Cross-Cultural Management	Discussion in class
6.1	Students show that they are able to work successfully in a team by performing practical tasks.	Conducting group work	Outcome of group work

Course Material:

- Handouts (e-learning based)

Background reading:

- Ehrlenspiel, K.: Integrierte Produktenwicklung. Hanser Verlag, München, 2009, ca. 80,-€ / 770 S.
- Engeln, W.: Methoden der Produktenwicklung. Oldenbourg, München, 2011, ca. 25,- € / 230 S.
- Schäppi, B. et al.: Handbuch Produktentwicklung. Hanser Verlag, München, 2005; ca. 150,- € / 840 S.
- Ponn, J.; Lindemann, U.: Konzeptentwicklung und Gestaltung technischer Produkte. Springer Verlag/VDI, 2011; ca. 70,- € / 460 S.
- Wimmer, W., et al.: Ecodesign – the competitive advantage. Springer Verlag, Dordrecht, 2011; 60,- € / 230 S.
- Fleischer, G. (Hrsg.): Eco-Design – Effiziente Entwicklung nachhaltiger Produkte mit euroMat. Springer Verlag, Berlin, 2000
- Behrend, S. et al.: Umweltgerechte Produktgestaltung – ECO Design in der elektronischen Industrie. Spinger Verlag, Berlin, 1996
- VDI-Richtlinien, u. a.
2206 (V-Modell/Mechatronik),
2221 (Entwicklungsmethodik),
2243 (Recyclinggerechte Produktentwicklung)
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Assessment:

WI Students and REM students will have different assessment methods. The WI method will be as follows:

- First Assignment will be a graded Exposé paper (project planning), weighed 1
- Second Assignment is the final oral presentation, weighed 2
- Third Assignment is the final written report (including an extended abstract in English language), weighed 3
- The final individual grade will be composed of the three assignments, and weighed according to the figures given above.

Recommendations: Observe the requirements and assessment table items in Table 1:

Table 1: Grading basis requirements for this lecture

Presentations	formal	Overview over the presentation (table of contents)
		Change of methods (e.g. video, use of board...)
		free speech
		inclusion of audience
		appropriate information on slides (little text)
		no typos/mistakes on slides
		identification of references
		summary
	contents	attractive start
		continuous line of thought and arguments
		sufficient depth of argumentation
		give quantitative information as much as possible
	Discussion	familiarity with topics
Papers	formal	pages max.announced in lecture not exceeded
		Submission due date kept
		paper printout
		identification of references (in text AND as foot/endnotes): Without references never better than "good"
		picture and table captions
		page numbers
		Introduction
		summary
		title
		date
		Identification of type of document
	contents	continuous line of thought and arguments
		sufficient depth of argumentation
		appropriate use of graphs and tables
		give quantitative information as much as possible

Grading: based on seminar / assignment results

- '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 exceptional work in the wrong direction or with unacceptable shortcomings.