TECHNISCHE HOCHSCHULE LÜBECK

Module: Advanced Product Development

Level	Master	**Short Name**	APD
Responsible Lecturers	Jacobs, Olaf, Prof. Dr.-Ing.; Kohlhase, Nils, Prof. Dr.-Ing.		
Department, Facility	Mechanical Engineering and Business Administration		
Course of Studies	Mechanical Engineering, Master		
Compulsory/elective	Compulsory	**ECTS Credit Points**	5
Semester of Studies	1	**Semester Hours per Week**	4
Length (semesters)	1	**Workload (hours)**	150
Frequency	SuSe	**Presence Hours**	60
Teaching Language	English	**Self-Study Hours**	90

The following section is filled only if there is **exactly one** module-concluding exam.

Exam Type	Written Exam	**Exam Language**	English
Exam Length (minutes)	120	**Exam Grading System**	One-third Grades
Learning Outcomes	The students understand • Finding solutions systematically • Methods for cost estimation • Variant orientated product construction methods • Management of R&D • The procedure of a life cycle assessment basically and apply this schematic to a simple application exemplarily • The systematic method to develop a material requirements list and apply this method to a simple application, • Derivation of performances indices acc. to the Ashby method for simple examples.		
Participation Prerequisites	Product Development (PD) (3. Semester)		

The previous section is filled only if there is **exactly one** module-concluding exam.

Consideration of Gender and Diversity Issues	✔ Use of gender-neutral language (THL standard) ✘ Target group specific adjustment of didactic methods ✘ Making subject diversity visible (female researchers, cultures etc.)
Applicability	Product Development (3. Semester) Composite Materials MSc thesis
Remarks	

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Module Course: Advanced Product Development

(of Module: Advanced Product Development)

Course Type	Lecture	**Form of Learning**	Presence
Mandatory Attendance	yes	**ECTS Credit Points**	5
Participation Limit		**Semester Hours per Week**	4
Group Size		**Workload (hours)**	150
Teaching Language	English	**Presence Hours**	60
Study Achievements ("Studienleistung", SL)		**Self-Study Hours**	90
SL Length (minutes)		**SL Grading System**	

The following section is filled only if there is a course-specific exam.

Exam Type		**Exam Language**	
Exam Length (minutes)		**Exam Grading System**	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	Advanced Methods for Product Development (Prof. Kohlhase) • Advanced methods for systematic solution finding • Methods for cost estimation • Size series development • Modular system development • R&D Management Materials selection (Prof. Jacobs) • Impact of material selection on production costs, utility, and ecological performance of the product. • Overview of engineering materials and their comparison. Discussion of simple product examples that can be made of various materials. • Overview of material testing and practical significance of characteristic material properties. • Systematic method to compile a materials requirement list. • Ashby method of performance indices. Derivation of performance indices for various applications and their discussion. • Life cycle Assessment and its application to various products
Literature	• Pahl, G., Beitz W., Feldhusen J., Grote, K. H.: Engineering Design, A Systematic Approach, 3rd Edition, Springer-Verlag London Limited 2007

	• Ehrlenspiel, K. u.a.: Kostengünstig Entwickeln und Konstruieren: Kostenmanagement bei der integrierten Produktentwicklung, Springer Vieweg 2014 • Lindemann, U.: Handbuch Produktentwicklung, Hanser 2016 • M.F. Ashby, Metarials selection in Mechanical Design • DIN EN ISO 14040 and 14044 • Additional materials in moodle course
Remarks	