TECHNISCHE HOCHSCHULE LÜBECK

Module: Prototyping and Virtual Reality (VR)

Level	Master	**Short Name**	PVR
Responsible Lecturers	Choi, Sung-Won, Prof. Dr.-Ing.		
Department, Facility	Mechanical Engineering and Business Administration		
Course of Studies	Mechanical Engineering, Master		
Compulsory/elective	Elective	**ECTS Credit Points**	5
Semester of Studies	2	**Semester Hours per Week**	4
Length (semesters)	1	**Workload (hours)**	150
Frequency	WiSe	**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	Project Work	**Exam Language**	English
Exam Length (minutes)		**Exam Grading System**	One-third Grades
Learning Outcomes	Students • know virtual engineering with different objectives and software-packages. • get experience in modelling and simulation of a product in a multi body system. • are aware of the opportunities and limits of additive manufacturing process.		
Participation Prerequisites			

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	
Remarks	Physical and virtual prototypes are used in different fields of R&D to verify the functionality or design of a product. Especially Virtual prototypes helps engineers to develop a product fast and effective although it not physical exists. With additive manufacturing techniques the product can be manufactured in the same material as a production model.

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Module Course: Prototyping and Virtual Reality (Lecture)

(of Module: Prototyping and Virtual Reality (VR))

Course Type	Lecture	**Form of Learning**	Presence
Mandatory Attendance	no	**ECTS Credit Points**	2
Participation Limit		**Semester Hours per Week**	2
Group Size		**Workload (hours)**	60
Teaching Language	English	**Presence Hours**	30
Study Achievements ("Studienleistung", SL)		**Self-Study Hours**	30
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	**Introduction into the topics** **Virtual product development** • Virtual products • Material, texture, lights **Kinematics of Rigid Bodies** **Multibody System** • Modelling **Additive Manufacturing**
Literature	• Hand-outs to lecture and to exercises • Literature according to the current list distributed in the class
Remarks	

Module Course: Prototyping and Virtual Reality (Practical Training)

(of Module: Prototyping and Virtual Reality (VR))

Course Type	Practical Training	**Form of Learning**	Presence
Mandatory Attendance	no	**ECTS Credit Points**	3
Participation Limit		**Semester Hours per Week**	2
Group Size		**Workload (hours)**	90
Teaching Language	English	**Presence Hours**	30
Study Achievements ("Studienleistung", SL)	Practical Training	**Self-Study Hours**	60
SL Length (minutes)		**SL Grading System**	Participation

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	**Virtual product development** • Virtual products • Material, texture, lights **Kinematics of Rigid Bodies** **Additive Manufacturing** **Multibody System** • Modelling
Literature	• Hand-outs to lecture and to exercises • Literature according to the current list distributed in the class
Remarks	