TECHNISCHE HOCHSCHULE LÜBECK

Module: Advanced Material Testing

Level	Master	**Short Name**	AMT
Responsible Lecturers	Prof. Dr.-Ing. Ulrike Täck		
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	WiSe	**Presence Hours**	75
Teaching Language	English	**Self-Study Hours**	75
The following section is filled only if there is **exactly one** module-concluding exam.			
Exam Type		**Exam Language**	
Exam Length (minutes)		**Exam Grading System**	
Learning Outcomes			
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	Knowhow important for mechanical design and failure analysis of engineering components		
Remarks	This Module comprises a portfolio exam. The lecture will be completed by a written exam (50 % of total grade) at end of semester. Successfull passing of practical training are further 50 % of the grade.		

Module Course: Advanced Material Testing Lecture

(of Module: Advanced Material Testing)

Course Type	Lecture	**Form of Learning**	Presence
Mandatory Attendance	no	**ECTS Credit Points**	3
Participation Limit		**Semester Hours per Week**	3
Group Size		**Workload (hours)**	90
Teaching Language	English	**Presence Hours**	45
Study Achievements ("Studienleistung", SL)		**Self-Study Hours**	45
SL Length (minutes)		**SL Grading System**	

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

Exam Type	Written Exam	**Exam Language**	English
Exam Length (minutes)	60	**Exam Grading System**	One-third Grades

Learning Outcomes	Students understand importants of cyclic loading, crack initiation and crack propagation on component life. Students understand influence of materials structure and processing on fatigue and fracture toughness.
Participation Prerequisites	Knowhow important for mechanical design and failure analysis of engineering components

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

Contents	Fatigue and fracture mechanics of metallic materials
Literature	W. D. Callister: Materials Science and Engineering, an Introduction, John Wiley & Sons, Inc. J. Rösler et.al.: Mechanical Behaviour of Engineering Materials. Springer-Verlag T. L. Anderson: Fracture Mechanics. Taylor & Francis J. Schijve: Fatigue of Structures and Materials. Kluwer Academic Publishers
Remarks	

Module Course: Advanced material Testing Portfolio

(of Module: Advanced Material Testing)

Course Type	Practical Training	**Form of Learning**	Presence
Mandatory Attendance	yes	**ECTS Credit Points**	2
Participation Limit		**Semester Hours per Week**	1
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	Portfolio Exam	**Exam Language**	English
Exam Length (minutes)		**Exam Grading System**	One-third Grades

Learning Outcomes	Students learn practice of fatigue testing Students learn how to plan and perform practical experiments Students learn how to document experiments Students learn how to discuss and judge own results
Participation Prerequisites	Module Material Science

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

Contents	Students perform fatigue tests on avrios materials and materials conditions, write reports about the results and scientific discussion
Literature	Same as mentioned before
Remarks	