

Module: Material Science

Level	Master	Short Name	MatSc
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	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		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	<ul style="list-style-type: none"> ✓ Use of gender-neutral language (THL standard) ✓ Target group specific adjustment of didactic methods ✗ Making subject diversity visible (female researchers, cultures etc.)
Applicability	This module is related to the modules Advanced material Testing and all modules which are about engineering design
Remarks	The total grade of this module is calculated from the written exam of the lecture (60 %) and of the portfolio project work (40 %)

Module Course: Material Science Lecture

(of Module: Material Science)

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	Knowing basics of structure and behavior of metallic materials Knowing steel and aluminium alloys in depth		
Participation Prerequisites			

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

Contents	Background: physical metallurgy Steel and Aluminium alloys: structure, processing, properties
Literature	W. D. Callister: Materials Science and Engineering, an Introduction, John Wiley & Sons, Inc. J. Roesler et.al.: Mechanical Behaviour of Engineering Materials, Springer P. Haasen: Physical Metallurgy, Cambridge University Press V. Läßle: Werkstofftechnik Maschinenbau, Europa Lehrmittel G. Gottstein: Physikalische Grundlagen der Materialkunde, Springer R. Bürgel: Festigkeitslehre und Werkstoffmechanik, Bd. 1 und Bd. 2, Vieweg
Remarks	

Module Course: Material Science Portfolio

(of Module: Material Science)

Course Type	Project Work	Form of Learning	Online supported with presence hours
Mandatory Attendance	no	ECTS Credit Points	2
Participation Limit		Semester Hours per Week	1
Group Size		Workload (hours)	60
Teaching Language	English	Presence Hours	15
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	Portfolio Exam	Exam Language	English
Exam Length (minutes)		Exam Grading System	One-third Grades
Learning Outcomes	Specialisation on application and scientific oriented materials science		
Participation Prerequisites	Material Science Lecture from same module		

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

Contents	Student chose material related topics for project work. This can be special materials and materials technologies of current scientific interest
Literature	Students research selfdepend their own literature: scientific publications and books with specialized topics
Remarks	