

## FAME<sup>AlS</sup> M1 TUDa HOME UNIVERSITY (first year students):

AUTUMN SEMESTER				
Course Name	ECTS	Workload	Module	Responsible
<b>Mandatory Courses</b>				
FAM/e-project	5	180	Collaborative course with partners	Joachim Brötz
Surfaces and interfaces	5	150	Surfaces and interfaces	Jan Philipp Hofmann
Research Lab I	4	120	Research Lab I	Wolfgang Donner
Functional Materials	6	180	Functional Materials	Oliver Gutfleisch
<b>Elective courses</b>				
Micromechanics for Materials Science *	6	180	Micromechanics for Materials Science	Baixiang Xu
Computational Material science **	5	150	Computational Material science	Karsten Albe
<b>TOTAL</b>	<b>30</b>			
SPRING SEMESTER				
Course Name	ECTS	Workload	Module	Responsible teacher
FAM/e-project	5	180	Collaborative course with partners	Joachim Brötz
Advanced Characterization methods of Materials Science	6	180	Advanced Characterization methods of Materials Science	Wolfgang Donner
Theoretical Methods in Material Science	6	180	Theoretical Methods in Material Science	Karsten Albe
Machine Learning in Materials Science	6	180	Machine Learning in Materials Science	Till Frömling
Advanced Research Lab (7)	7	360	Professional training	Joachim Brötz
<b>TOTAL</b>	<b>30</b>			

\* The Course “**Micromechanics for Materials Science**” can be replaced by the course “Quantum Mechanics for Materials Science (6 ECTS)”

\*\* The Course “**Computational Material science**” can be replaced by any course of our Materials Science department with 4 ECTS which are listed in “*elective courses M. Sc. Materials Science*” in the TUCaN system (see elective courses for FAME<sup>AlS</sup> M2 on the next page). Students without a bachelor degree in Materials Science or Physics can also use the course “Concepts in Materials Physics (6 ECTS)” on request.

° The module “**Discussion with Mentor**” is also compulsory

# FAME<sup>AlS</sup> M2 TUDa HOME UNIVERSITY (second year students)

AUTUMN SEMESTER			
Course Name	ECTS	Workload	Module
<b>Mandatory Courses</b>			
<b>Micromechanics for Materials Science *</b>	6	180	11-01-4109
<b>Research Lab I</b>	4	120	11-01-4101
<b>Elective courses **</b>			
Advanced Research Lab (8)	8	240	11-01-4197
Ceramic Materials: Syntheses and Properties. Part II	4	120	11-01-7342
Concepts in Materials Physics	6	180	11-01-2009
Computational Material science	5	150	11-01-7562
Electrochemistry in Energy Applications II:	4	120	11-01-7301
Engineering Microstructures - Processing, Char. and Application	4	120	11-01-8131
Finite Element Simulation in Material Science	4	120	11-01-2027
Focused Ion Beam Microscopy: Basics and Applications	4	120	11-01-9063
Fundamentals and Techniques of Modern Surface Science	4	120	11-01-8202
Interfaces - From wetting to friction	4	120	11-01-2016
Introduction to Scanning Electron Microscopy	1	30	11-01-7892
Magnetism and Magnetic Materials	4	120	11-01-2001
Materials Chemistry	4	120	11-01-7292
Mathematical Methods in Materials Science	4	120	11-01-3018
Mechanical Properties of Ceramic Materials	4	120	11-01-9332
Mechanical Properties of Metals	4	120	11-01-2006
Metastable Materials: Structure, Properties and Processing	4	120	11-01-2028
Micromechanics and Nanostructured Materials	4	120	11-01-7070
Modern steels for automotive applications	4	120	11-01-9090
Organic Functional Materials: From LCD to Molecular Circuits	4	120	11-01-2026
Polymer Materials	6	180	11-01-3031
Porous Ceramics for Energy-Related Applications	4	120	11-01-2023
Quantum Mechanics for Materials Science	6	180	11-01-4004
Semiconductor Interfaces	4	120	11-01-8162
<b>TOTAL</b>	<b>30</b>		
<b>SPRING SEMESTER</b>			
<b>Master thesis</b>	<b>30</b>	<b>900</b>	
<b>TOTAL</b>	<b>30</b>		

\* The Course “**Micromechanics for Materials Science**” can be replaced by the course “*Quantum Mechanics for Materials Science (6 ECTS)*”

\*\* All eligible “**Elective courses**” are listed in “*elective courses M. Sc. Materials Science*” in the TUCaN system. Only the following courses cannot be chosen: "Surfaces and Interfaces", "Functional Materials", "Materials Science for Renewable Energy Systems" or "Advanced Research Lab". Students without a bachelor degree in Materials Science or Physics can also use the course “Concepts in Materials Physics (6 ECTS)” on request.

° The module “**Discussion with Mentor**” is voluntary but recommended