Course description for the FAME Master Program - Technical University of Darmstadt

TECHNISCHE UNIVERSITÄT DARMSTADT

Course description (Semester 3) — 30 ECTS*

*ECTS: European Credit Transfer System

Lectures (mandatory)	**7 ECTS**
Seminar: Research Topics in Materials Science	2 ECTS
Quantum Mechanics for Materials Science	5 ECTS
Lab Courses (mandatory)	**8 ECTS**
Reseach Lab I	4 ECTS
Polymer Processing of Ceramics PDC - Synthesis	
PDC – Characterization	
Thin film growth of YBaCuO by PLD + RT	
Transmission Electron Microscopy (TEM)	
Reciprocal space mapping and X-Ray Reflectivity (XRR)	
X-ray Fluorescence Spectrometry (XRS)	
Reseach Lab II	4 ECTS
AFM Surface Characterization	
Inductively Coupled Plasma Spectrometry (ICP)	
Atomic Absorption Spectroscopy (AAS)	
Secondary Ion Mass Spectroscopy (SIMS)	
Characterization of a lambda probe	
Lithium Batteries	
Fuel Cells	
Sections and Seminars (optional)	**0 ECTS**
Guidance for papers and theses - Section	
Colloquium: Materials Science - Colloquium	
Materials in Medicaltechnology - Seminar	
Seminar for diploma and doctoral candidates - Seminar	
Seminars for each work group - Seminar	

Lectures (compulsory optional subject)	**15 ECTS**
Ceramic Materials: Syntheses and Properties. Part II	4 ECTS
Fundamentals and Techniques of Modern Surface Science	4 ECTS
Semiconductor Interfaces	4 ECTS
Magnetism and magnetic materials	4 ECTS
Nanomaterials for catalysis and sensors	4 ECTS
Material Science for Renewable Energy Systems	5 ECTS
Computational Materials Science	5 ECTS
Organic Semiconductors	4 ECTS
Self-Organization in Soft Matter	4 ECTS
Concepts in Materials Physics	5 ECTS
Engineering Microstructures	4 ECTS
High-Pressure Synthesis of Advanced Materials	4 ECTS
Mechanical Properties of Ceramic Materials and Composites	4 ECTS
Topochemical Analysis I	4 ECTS
X-Ray Course: Single-Crystal Diffraction – course	2 ECTS
Electrochemistry in Energy Applications	4 ECTS
Instrumental Chemical Analysis	4 ECTS
Nanomaterials: Synthesis, Size-Dependent Properties	4 ECTS
Chemistry for Students of Materials Science	4 ECTS
High-Resolution Scanning Electron Microscopy - course	2 ECTS
Theoretical Methods of Materials Science	4 ECTS
Quantum Physics for Materials Scientists	4 ECTS
Superconductivity and 0xide Materials	4 ECTS
Numerical Methods in Mechanics I	4 ECTS
Characterisation Methods in Materials Science	4 ECTS
Course Processing of Conventional and Polymer Derived Silicon Ceramics	4 ECTS
Seminar Metals	3 ECTS
Transmission Electron Microscopy	4 ECTS