

DEPARTMENT OF MATERIALS SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	Academic Year			Semester
MWT309	3			5
Title	T	A	L	ECTS
Metallic Materials	2	1	1	6
Language	German			
Level	Undergraduate	X	Graduate	Postgraduate
Department / Program	Materials Science and Technology			
Forms of Teaching and Learning	Face to face			
Course Type	Compulsory		Elective	X
Objectives	Classification and properties of metals, Characteristic knowledge of the corresponding manufacturing and processing technologies, knowledge of the main metallic materials: structure, processes, application.			
Content	Strain-voltage curve (single crystal, polycrystal), increase in strength (plastic deformation, Hall-Petch, mixed crystal, dispersion, precipitation, texture, phase transformation), thermal effects (diffusion, recovery, recrystallization, grain enlargement, phase transitions, nucleation, spinodal segregation), Dynamic stress and fracture, technology of production and processing of metallic materials			
Prerequisites				
Coordinator				
Lecturer(s)				
Assistant(s)				
Work Placement	No			
Recommended or Required Reading				
Books / Lecture Notes	Bergmann, W., Werkstofftechnik 2: Werkstoffherstellung, Werkstoffverarbeitung, Werkstoffanwendung, 4. Auflage, Carl Hanser. 2001			
Other Sources	1. Bargel, H. J. und G. Schulze, Werkstoffkunde, 11. Auflage, Springer. 2. Hornbogen, E., E. Werner und G. Eggeler, Werkstoffe: Aufbau und Eigenschaften von Keramik-, Metall-, Polymer- und Verbundwerkstoffen, 9. Auflage, Springer. 3. Bergmann, W., Werkstofftechnik 1: Struktureller Aufbau von Werkstoffen - Metallische Werkstoffe - Polymerwerkstoffe - Nichtmetallisch-anorganische Werkstoffe, 7. Auflage, Carl Hanser. 4. Bergmann, W., Werkstofftechnik 2: Werkstoffherstellung, Werkstoffverarbeitung, Werkstoffanwendung, 4. Auflage, Carl Hanser. 2001			
Additional Course Material				
Documents				
Assignments				
Exams				

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Course Composition			
Mathematics und Basic Sciences			%
Engineering			100%
Engineering Design			%
Social Sciences			%
Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge			%
Assessment			
Activity	Count		Percentage (%)
Midterm Exam	1		40
Quiz			
Assignments			
Attendance			
Recitations			
Projects			
Final Exam	1		60
		Total	100
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	3	42
Assignments	2	20	40
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	3	42
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	172
		ECTS Points (Total Work Load / Hours)	6
Learning Outcomes			
1	Classification and properties of metals, Characteristic knowledge of the corresponding manufacturing and processing technologies, knowledge of the main metallic materials: structure, processes, application.		
2			

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Weekly Content

1	Mechanical behavior of materials
2	Binary iron-carbon system
3	Analysis of the heat treatment of steel
4	Ferrous and nonferrous alloys
5	Discussion of important industrial metal processes, and analyze processing structure-property relationships
6	Discussion of metals applications and requirements in the microelectronics
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Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1	2	2				1	
2							
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Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

Compiled by:

Date of Compilation: