

MATS8AH MICROSTRUCTURE DEVELOPMENT AND METALLIC MATERIALS

MATS8AH		ECTS Credits : 2		Semester : S8	
Microstructure development in metallic materials		Duration : 21 hours			
Person(s) in charge:					
Elisabeth BAUER-GROSSE, Professor, elisabeth.bauer-grosse@mines-nancy.univ-lorraine.fr					
keywords:					
Microstructure - Phase transformation - Germination and growth - Treatments					
Prerequisites:					
SM032: Atomic and molecular arrangements: structures and defects SM034: From Phase Diagrams to Microstructures					
General objective :					
Know and design the microstructure of a material					
Programme and Contents:					
<ul style="list-style-type: none">• Different classes of phase transformations: with and without diffusion• Use of driving forces• Nucleation• Growth• Solid state treatments• TTT and TRC curves• Ways to build microstructures					
References					
<ul style="list-style-type: none">- Introduction to Materials Science Traité des matériaux Chapitre IX: Phase transformations and microstructures- Phase transformations in Metals and Alloys, D.A Porter, K. E. Easterling- Documents of common core courses					
Abilities:					
Level		Description and operational verbs			
Know		A material often needs to answer contradictory requirements and its design is an exercise in compromise.			
Understand		The processes of microstructures formation			
Apply		Examples of metal alloys in the industry			
Analyse		Formation of microstructures			
Summarise		Controlling the formation of microstructure to combine the required properties			
Evaluate		A written test at the end of the course			
Assessment:					
<input checked="" type="checkbox"/> Written Test		<input type="checkbox"/> Continuous Control		<input type="checkbox"/> Oral Report	
				<input type="checkbox"/> Project	
				<input type="checkbox"/> Written Report	

