UNIVERSITÀ DI PAVIA

Anno Accademico 2016/2017

METALS AND CERAMICS PHYSICAL CHEMISTRY

Enrollment year	2016/2017
Academic year	2016/2017
Regulations	DM270
Academic discipline	CHIM/02 (PHYSICAL CHEMISTRY)
Department	DEPARTMENT OF CHEMESTRY
Course	CHEMISTRY
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (01/10/2016 - 20/01/2017)
ECTS	6
Lesson hours	48 lesson hours
Language	ITALIAN
Activity type	ORAL TEST
Teacher	ANSELMI TAMBURINI UMBERTO (titolare) - 3 ECTS GHIGNA PAOLO - 3 ECTS
Prerequisites	Elementary classical thermodynamics, crystallography and solid state chemistry
Learning outcomes	Aim of the course is to give to the students the instruments for understanding the material chemistry of metals and ceramics
Course contents	The first part deals with the microscopic aspects of the basical properties of metals. In particular, the role of crystal structure, microstructure and defect chemistry in determining the mechanical proerties will be discussed. Then, the microscopic mechanisms of the main industrial processes for metal treatment, as cold working, annealing and secondary phase precipitation will be illustrated. Finally examples of application in the context of metallic systems of considerable technological interest will be presented. The second part of the course deals with ceramic materials, discussing

	first the stability conditions starting from the free energy - composition curves at different temperatures. Then, a review of the structures of main interest to ceramic materials (spinel, perovskite, rutile, garnet, pyrochlore, fluorite, zircon and related structures) will be rewieved , with particular emphasis on the distinction between short and long range order. Disordered compounds are then treated mainly with regard to the techniques for advanced structural investigation, ending with a discussion of the local structure of amorphous ceramics.
Teaching methods	Lectures
Reccomended or required readings	Slides of the lecture are availble to the students, as well as references to review papers from the scientific literature
Assessment methods	Oral Examination
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile