C O U R S E G U I D E – s h o r t f o r m

Academic year 2017/2018

Course name[1]	**Heating processes bases**					Course code		3SM03	
Course type[2]	DID	Category[3]	DI	Year of study	III	Semester	I	Number of credit points	5

Faculty	Materials Science and Engineering	Number of teaching and learning hours[4]					
Field	Materials Engineering	Total	L	T	LB	P	IS
Specialization	Materials Science	56	28	-	28	-	-

Pre-requisites from the curriculum[5]		
	Compulsory	Not applicable
	Recommended	Not applicable

General objective [6]	Knowledge using of physical chemistry, alloys thermodynamics, chemistry and mathematics apparatus for creating of mathematics models , for thermodynamic parameters of chemical processes specific to materials science.
Specific objectives[7]	Analysis of chemical processes, thermodynamically, that occur at high temperatures - equilibrium, kinetics, pressure, initial conditions, variation of free enthalpy, etc - in order to control processes that occur for alloys manufacture, thermal treatment, plastic deformation, powder metallurgy, welding, extractive metallurgy, etc.

Course description[8]	1. History of processes that occur at high temperatures 2. Vaporization processes at unicomponent and bicomponent systems 3. Formation and dissociation of oxides and carbonates 3.1. Analysis of the process AB = A + B 3.1.1. A and B are in pure state or as supersaturated solution 3.1.2. A and B form solutions with reciprocal and unlimited solubility 3.1.3. A and B form solutions with reciprocal and limited solubility 3.1.4. A and B are dissolved in a C solvent 3.2. Formation and dissociation of a oxide in different situations 3.2.1. MeO and Me are in pure state 3.2.2. MeO is dissolved in Me 3.2.3. Me'O and Me' are dissolved in Me 3.2.4. Oxygen potential 3.2.5. Formation and dissociation of iron oxides 4. Reduction of metallic oxides 4.1. Thermodynamics 4.2. Metallothermic reduction 4.3. Reduction for complex systems 4.3.1. Oxides that are in solution 4.3.2. Reaction product is dissolved in a solvent 4.3.3. Reaction product form chemical compound 4.3.4. Reduction of complex chemical compounds 4.3.5.Direct and non-direct reductions 5. Thermodynamics of reactions from C-S system 6. Thermodynamics of reactions from C-H system3.3. Reaction product form chemical compound 4.3.4. Reduction of complex chemical compounds 4.3.5.Direct and non-direct reductions 5. Thermodynamics of reactions from C-S system 6. Thermodynamics of reactions from C-H system There are 8 laboratory works – the last one is for finale evaluation and retrieving.

Assessment			Schedule[9]	Percentage of the final grade (minimum grade)[10]
Continuous assessment	Class tests along the semester		W5, 10 and 14.	10% (at least 5 mark)
	Activity during laboratory work		W1-w14	35% (at least 5 mark)
	Homework		W 12	15% (at least 5 mark)
Final assessment	Final assessment form[11]	Exam	Ses.	40%(at least 5 mark)
	Examination procedures and conditions: Oral exam, exam tickets. A ticket contains three exam subjects. It is required that two topics must be marked with marks of at least 5. Mark exam passage must be at least 5. Examination takes place if the lab, home work and each of the three tests have a propotion mark of at least 5, only.			

Course organizer	Vasile Cojocaru Filipiuc, dr., eng., Prof.	
Teaching assistants	Nicanor Cimpoeşu, dr., eng., lect.	

[1]Course name from the curriculum

[2] DF – fundamental, DID – in the field, DS – specialty, DC – complementary (from the curriculum)

[3] DI – imposed, DO –optional, DL – facultative (from the curriculum)
[4] Points 3.8, 3.5, 3.6a,b,c, 3.7 from the Course guide – extended form (L-lecture, T-tutorial, LB-laboratory works, P-project, IS-individual study)
[5] According to 4.1 – Pre-requisites - from the Course guide – extended form
[6] According to 7.1 from the Course guide – extended form
[7] According to 7.2 from the Course guide – extended form
[8] Short description of the course, according to point 8 from the Course guide – extended form
[9] For continuous assessment: weeks 1 – 14, for final assessment – colloquium: week 14, for final assessment-exam: exam period
[10] A minimum grade might be imposed for some assessment stages
[11] Exam or colloquium

20.09.2017