

COURSE DESCRIPTION

Name of the Course:		New Structural Materials						
Specialization Code:		U02.07.ICV.IZ.M24.		Course Code:		1.DD.OP01		
Year of study:	1	Semester:	1	Examination form: (E-Exam; Co- Colloquy; P-Project; P/F-Passed/Failed)	Co	ECTS credits granted (CR):	E (Co)	4
							P (P/F)	
Course Category: (DF- Fundamental; DD- General engineering; DS-Specialty engineering; DC-Complementary; PR-Practical stage)								DD
Course Type: (OB-Compulsory; OP-Elective; FC-Facultative)								OP
Number of hours per semester: Total of hours per week (TH) x Number of weeks per semester								
TOTAL :	84	Individual study (IS):		42	Contact hours (C + S;L;P):		42	
Academic staff member in charge: (Full name, Academic position and Department)				<i>Paul Florica, prof., Chemistry and Building Materials</i>				

Faculty	Engineering in foreign languages Master study programme	Number of contact hours per semester				
		Total	Course	Seminar	Laboratory	Project
Field	Civil Engineering	42	28		14	
Specialization	Civil Engineering					

Course objectives - Description of the main competences:

Understanding, production and application modern engineering materials.

1. COURSE

1. Classification of materials. New conception of materials.
 - 1.1. Durable and sustainable development(1 h).
 - 1.2 Ecological properties of materials and Environmental Effects(1/2 h).
 - 1.3 Ceramic materials; Metals and alloys; Polymers (1/2h).
2. The properties of materials in the concept of durable and sustainable development
 - 2.1 Physical, mechanical and thermal properties, ecological properties (1h)
 - 2.2 The influence of building materials in the environmental (1h).
3. Modern ceramic materials
 - 3.1 Modern ceramic materials (1h).
 - 3.2 modern glassy structure materials (1h).
4. Metals and alloys
 - 4.1 New and advances in metallic structures(1h).
 - 4.2 Evaluation of fire and corrosion protection(1h).
5. Organic structural materials
 - 5.1 Modern wood structure(1h).
6. Composite materials
 - 6.1 Classification(1h).
 - 6.2 Components (1h).
 - 6.3 Properties (1h).
 - 6.4 Application(1h).
7. Durable and Sustainable modern concrete procedeeng of challenges of concrete construction.
 - 7.1 Modern concrets, classification and applications (1h).
 - 7.2 Modern concrete components:
 - lightweight and special aggregate (1h)
 - special Portland cement binders(2h)
 - unconventional binders- geopolymeric binders(1h)
 - modern admixtures (2h)
 - fiber Reinforced(1h)
 - disperse – Reinforced materials(1h)
 - 7.3 Progress in concrete
 - fiber –reinforced concrete(1h)
 - self compacting concrete(1h)

	<ul style="list-style-type: none"> - high performance concrete(1h) - durability performance of concrete made with recycled concrete aggregates.
2. Seminar / Laboratory / Project / Practical stage	<ol style="list-style-type: none"> 1. Physical properties of materials. 2. Tensile strength for metals, wood, polymers 3. Composition of modern concrete mix. 4. The technical properties of mix concrete and self compacting concrete. 5. Technical properties of hardened concrete. 6. Technical properties of brick.
3. Bibliography	<ol style="list-style-type: none"> 1. Florica Paul, Civil Engineering Materials, editura Matrix, 2008 2. Handbook of Composites, S.T. Peters, Chapman & Hall 1998 3. General Guidelines for Working with Sime Mortar ans Simewash – w.w.w. howardhalfarm.com. 4. http://cpas.mtn.edu/cencitt/efficient materials utilisation assesment 5. http://w.w.w.ima-eu.org MA – Europe 6. http://w.w.w.nsga.org.Aggregate handbook 7. http://w.w.w.glassoline.com A Brief – History of Glass. 8. Bijen J.M. Environmental information on concrete. Sustainable concrete construction, Editor R.K. Dhir 2002 9. Durable concrete structures design guide, Thomas Telford Ltd. 1992 Aitcin, C.P. Binders for durable and sustainable concrete, Ed. Taylor and Francis, 2005

Criteria to be considered for the final mark	Weight of each criterion in the final mark (%)
1. Exam defence (final examination)	50
2. Appreciation during the entirely semester	10
2.1 Seminar activity	-
2.1 Laboratory activity	-
2.2 Project activity (the project has not a distinct final mark)	40
3. Periodical examinations	-
3.1 Written / oral examination	-
3.2 Home works, reports, essays etc.	-
4. Other criteria (to be specified)	-
Short description of the final evaluation procedure: Written examination with individual subjects.	

Estimation of the total number of hours per semester requested for the individual study (IS)			
Type of individual activity	No. of hours	Type of individual activity	No. of hours
1. Study of the course notes	10	8. Preparation of the final examination	10
2. Study of the compulsory bibliography	6	9. Advisory class participation	-
3. Study of the supplementary bibliography	-	10. Practical documentation on site	2
4. Preparation of specific activities	-	11. Additional documentation on library	4
5. Preparation of home works	10	12. Internet network documentation	-
6. Preparation of periodical written examinations	-	13. Others (to be specified)	-
7. Preparation of periodical oral examinations	-	TOTAL number of hours	42

Date:
09.04.2013

Signature of the Academic Staff member in charge:
Paul Florica