Course Outline Model (Syllabus)		
Faculty:	Faculty of Geosciences	
Name of study program:	Materials and Metallurgy	
Department:	Materials and Metallurgy	
Level:	Master	
The code of subject:	1	
Subject:	Heat treatment	
Subject Status:	Compulsory	(Compulsory or Elective)
Semester:	III	(Winter / Summer)
Total hours:	3+2	(According to approved programe)
ECTS:	6	(According to approved programe)
Schedule / Hall		
Academic year:		
Professor:	Prof.Asoc.Dr.Muharrem Zabeli	
Assistants:		
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BRIEF CONTENT OF SUBJECT	Basics and main heat treatment operations. Heat treatment methods (tempering, normalization annealing, recrystallization annealing, stress reduction annealing, reflux). Characteristics and features of heat treatment methods. Practical application of some heat treatment methods. TTT diagrams and phase transformations.
AIMS	Students gain knowledge about: - Main processes of thermal treatment of steel and non-ferrous metals (annealing, tempering, refilling) - Thermochemical processes of surface reinforcement of details such as: cementation, nitration, carbonitration, etc. - Practical application of heat treatment methods.
EXPECTED LEARNING OUTCOMES	At the end of the course the student is expected to be able to: 1. Know and describe the methods of thermal processing of metals. 2. Apply in practical form the methods of thermal processing. 3. Compare the results achieved before and after thermal treatment. 4. Use heat treatment methods (baking, tempering, refilling) to improve the properties of metals - alloys. 5. Assess the hardness of steel and other alloys and identify possible errors during thermal treatment. 6. Lead and manage a heat treatment line

PROGRAM	**Weeks**	Topic and Readings
	Week - I	Introduction. Interior construction of metals and alloys
	Week - II	Phase structural transformations under unbalanced conditions
	Week - III	TTT-diagrams
	Week - IV	Main and special methods of heat treatment
	Week - V	Baking process and tempering methods,
	Week - VI	Methods for determining tempering
	Week - VII	The first evaulation
	Week - VIII	Thermochemical processes, carbonization, nitration, carbonitrification, boron
	Week - IX	New technologists in the field of thermo-chemical processing
	Week - X	Heat treatment of cast iron
	Week - XI	Heat treatment of non-ferrous metals
	Week - XII	Heat treatment of welded joints
	Week - XIII	Tools, equipment and tools needed for heat treatment
	Week - XIV	Second evaluation
	Week - XV	Possible errors during thermal processing
LITERATURE	1.Hysni Osmani. “Përpunimi termik”, University books of Prishtina. 2.Gian Mario Paolucci, ‘’Leksione të Metalurgjisë – Teknologjia e materialeve metalike’’, Vëll. II (Përkthyer nga Ariana Deshiri, Botimi i 2, Tiranë 3. ASM Handbook Volume 4: “Heat Treating”, ASM International, The Materials Information Company	
TEACHING METHODOLOGY	**Lectures, exercises, presentations, assignments and industry visits**	

Contribution to student workload (which should correspond to student learning outcomes 1 ECTS credit = 25 hours)			
Activity	**Hours**	**Day/Week**	**Total**
Lectures	3	15	45
Exercise sessions - theoretical	2	15	30
Field exercises			
Practical work	3	3	9
Consultation with the professor / assistant	2	2	4
Colloquiums / seminars	2	2	4
Independent tasks (work)	4	3	12
Student self study time (in library or at home)	2	15	30
Final exam preparation	2	2	4
Time spent in assessment (tests, quizzes, final exams)	2	3	6
Projects, presentations, etc.	1	3	3

EVALUATION

Evaluation methods [according to the Statute and Regulation of UMIB Studies]	
Tests	30%
Practical test during exercises	10%
Seminary work (in word)	10%
Interpretation and presentation of seminary work	
Tasks and essays during the semester	10%
Final exam	10%

ACADEMIC POLICIES	• Work with Computer Written works must be computer written. In the paper work it is obligatory to respect the criteria for both the visual and the content aspect of the required works. Along these paper work it is required to respect the spelling rules and APA style • Ethics in teaching The different semester papers should be papers of each student. There will be no tolerance for copying, "borrowing" from the Internet or any other material. The same or similar works will have negative evaluations in the final evaluation of the student. • Deadlines The deadlines for submitting the paper work will be determined in agreement with the students. There will be no tolerance for delays in the submission of works. Failure to arrive at the time when the assignment is explained does not justify the student for not submitting the paper. The deadline will be given earlier. If you are going to travel abroad, then you need to submit the paperwork in advance. The student has the right to request a consultation with the professor whenever he / she deems it reasonable and necessary to carry out his / her work. • Rules of conduct and academic policies: o active participation of students in lectures o participation in discussion, comments and free expression of opinion, opinion and academic position (with arguments) o Mandatory independent work and use of additional sources of information (various scientific websites, scientific journals, conference proceedings, etc.) o Respecting lecture schedules without compromising academic freedom (silent cell phones) o respecting the word, thoughts and ideas of colleagues o low tolerance for late arrivals and departures without any valid reason o preparation and equipping with relevant lectures, (obligation of the teacher).

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