Course Outline Model (Syllabus)		
Faculty:	GEOSCIENCES	
Name of study program:	Metallurgy	
Department:	Materials and Metallurgy	
Level:	Bachelor	
The code of subject:	7	
Subject:	Ferronickel production technology	
Subject Status:	Mandatory	(Compulsory or Elective)
Semester:	Sixth (VI) /Summer	(Winter / Summer)
Total hours:	2+2	(According to approved programe)
ECTS:	4	(According to approved programe)
Schedule / Hall		
Academic year:		
Professor:	Prof.Asoc.Dr.Zarife Bajraktari-Gashi	
Assistants:	Msc.Ass.Mimoza Kovaçi-Azemi	
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Phone:		

BRIEF CONTENT OF SUBJECT	The course contains technological processes of ferronickel production in Kosovo and other countries. Developments and research results of nickel-bearing ores in the world. The composition of laterite ores and iron-nickel sulfides and auxiliary processes. Analysis of graphical representations of industrial and laboratory processes. Results of industrial research with laboratory equipment and semi-industrial plants. In addition to the theoretical part, we also perform numerical, laboratory and industrial tasks.
AIMS	The aim of the course is for students to acquire knowledge, understand, evaluate and identify the process and stages of ferronickel production.

EXPECTED LEARNING OUTCOMES	At the end of the course the students are expected to be able to: 1. Students from the acquired knowledge are able to identify the subjects that make up the loads for rotary kilns. 2. Students are able to distinguish fuel-to-ore ratios, discuss in favor of the production process. 3. Students from the experience of laboratory and industrial research are able to apply knowledge in pyrometallurgical processes. 4. From the acquired knowledge students, analyze, categorize processes. 5. Students evaluate the data obtained during the processes. 6. Students, distinguish the appropriate parameters of pyrometallurgical processes. 7. Students come to understand the importance of the Fe-Ni alloy.	
PROGRAM	Weeks	Introduction - General basics of ferronickel production technology
	Week - I	Laterite ores and sulfide- characteristics, deposits.
	Week - II	Fuels, their characteristics
	Week - III	Fe-Ni production processes in the world, H2SO4 pressing process in Ni-Co production, Ni-Co production with hydrometallurgical processes (Australia) etc
	Week - IV	Development and research results with nickel oxide bearing ores in the world.
	Week - V	Visit to the Ferronickel Laboratory - Ore and Fuel Analysis Unit
	Week - VI	The first evaluation tes
	Week - VII	Research with laboratory equipment and semi-industrial facilities.
	Week - VIII	Laboratory research, with Çikatove ore, boiling temperature, conclusions of laboratory and semi-industrial results
	Week - IX	Frying production process in rotary kilns, loads, process, areas, adhesions etc.
	Week - X	Presentation of the results and their discussion in the rotary kiln "Linder" in Fe-Ni Kavadarc
	Week - XI	Results of industrial research on the process of smelting nickel oxide ores in electric furnaces.
	Week - XII	Electric furnace process 2007-2018-Drenas
	Week - XIII	Visit to the Ferronickel Plant - Part of the rotary and electric furnaces Processor in converters - Ferronikel Plant, Drenas
	Week - XIV	Ferronickel production process - advantages and disadvantages of the process.
	Week - XV	The second evaluation test

LITERATURE	[1]. Zarife Bajraktari-Gashi ” Nikeli dhe përftimi i ferronikelit në Drenas”, në proces të botimit, 2020 [2]. Nagip A. Murati ‘ Metalurgjia e feronikelit “, Tiranë [3].Agron Dhima”Bazat e metalurgjisë ekstraktive” Tiranë, 2010 [4].PhD-Zarife Bajraktari-Gashi” Teorical and experimental research in order to reach optimum technical,technologic and productive parameters during qualitative reduction of Ni ore in Fe-Ni foundry in Drenas” , November 2012 *[5]*. The Complete Book on Ferroalloys (Ferro Manganese, Ferro Molybdenum, Ferro Niobium, Ferro Boron, Ferro Titanium, Ferro Tungsten, Ferro Silicon, Ferro Nickel, Ferro Chrome) " Paperback – 2017, by B.P Bhardwaj
TEACHING METHODOLOGY	*Lectures, exercises, individual work, experimental work, seminar papers, mid term, essays, field work, group work, etc.*

Contribution to student workload (which should correspond to student learning outc
credit = 25 hours)

Activity	Hours	Day/Week	Total
Lectures	2	15	30
Exercise sessions - theoretical	2	15	30
Field exercises	-		
Practical work	-		
Consultation with the professor / assistant	2	-	2
Colloquiums / seminars	2	2	4
Independent tasks (work)	2	3	6
Student self study time (in library or at home)	2	15	30
Final exam preparation	4	4	16
Time spent in assessment (tests, quizzes, final exams)	2	2	4
Projects, presentations, etc.	1	3	3
Total			125

<table>
<tr><td>EVALUATION</td><td>
<table>
<tr><td colspan="2">Evaluation methods
[according to the Statute and Regulation of UMIB Studies]</td></tr>
<tr><td>Tests</td><td>2 x 15 %</td></tr>
<tr><td>Practical test during exercises</td><td>5 %</td></tr>
<tr><td>Seminary work (in word)</td><td>10%</td></tr>
<tr><td>Interpretation and presentation of seminary work</td><td>10%</td></tr>
<tr><td>Tasks and essays during the semester</td><td>5%</td></tr>
<tr><td>Final exam</td><td>40%</td></tr>
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<tr><td>ACADEMIC POLICIES</td><td>Seminars and presentations must be written on a computer and students will be given deadlines for submitting seminars, presentations and assignments.
During the student evaluation, active participation in lectures will be taken into account, for example: discussions, comments and free expression of opinion, opinion and academic position (with arguments). Also, it will be mandatory to work independently and use additional sources of information (various scientific websites, scientific journals, conference proceedings, etc.)
The obligation of the teacher is to prepare and equip with the relevant lectures.</td></tr>
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