

UNIVERSITY OF ZAGREB

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UNDERGRADUATE UNIVERSITY STUDY PROGRAM METALLURGY



SVEUČILIŠTE U ZAGREBU METALURŠKI FAKULTET

UNIVERSITY OF ZAGREB FACULTY OF METALLURGY

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(from academic year 2017/2018)

No.	Designation	LEARNING OUTCOMES AT THE PROGRAM LEVEL
1	Gen-01	Explain the physical-chemical fundaments of phenomena characteristic for the technical profession.
2	Gen-02	Apply thermodynamic laws on production processes.
3	Gen-03	Analyse the present situation, identify problems, formulate and
		recommend the optimal technological solution by using the knowledge acquired.
4	Gen-04	Apply acquired IT knowledge in engineering practice.
5	Gen-05	Apply logical conclusion and precision in data processing.
6	Gen-06	Compare and choose individual technological process.
7	Gen-07	Identify processes and connect obtained results with theoretical models.
8	Gen-08	Choose the most convenient form of energy from the perspective of sustainable development.
9	Gen-09	Use the skills and knowledge of qualitative and quantitative analysis.
10	Gen-10	Apply norms in the technical profession
11	Gen-11	Apply teamwork-oriented, ethical principles and encourage the development of communication and social skills.
12	Met-01	Explain the present situation and define developmental trends of metallurgy as a profession and its impact on the entire economy.
13	Met-02	Describe the material production, select their types and explain their properties for a specific area of application.
14	Met-03	Explain and apply the technology of metals' production, treatment and
14	Met-05	forming.
15	Met-04	Calculate material and thermal balance of metallurgical processes.
16	Met-05	Predict and solve problems in metals' production.
17	Met-06	Create simple computer applications and use them within existing in
	_	metallurgical processes.
18	Met-07	Identify material properties and technological process parameters and
		adjust them in order to achieve the desired product quality.
19	Met-08	Get acquainted with new metallic materials and technologies and be
		able to apply them in practice.
20	Met-09	Describe and explain the modern technologies in the metallurgical
	-	practice.
21	Eco-01	Describe the present situation and developmental trends of modern industrial ecology.
22	Eco-02	Recognize the eco-toxicological effects on the environment.
	1200-02	

23	Eco-03	Compare and choose the best available techniques (BAT) in environmental protection of the metallurgical process and other industries.										
24	Eco-04	Predict solutions for efficient waste management.										
25	Eco-05	Recognize the connection of health and ecological risks.										
26	Eco-06	Apply the regulations relevant to environmental protection in the production processes.										
27	Eco-07	Predict methods and identify samples for determining the causes of										
		pollution of environmental components.										
28	Eco-08	Describe waste characterization.										

FROM ACADEMIC YEAR 2017/2018					N	1A1	FRI	X C	DF	LEA	ARI	NIN	١G	οι	JTC	0	ME	S	AT	TH	IEI	LE\	/EL	. 0	FΤ	ΉE		
		UNDERGRADUATE UNIVERSITY STUDY PROGRAM METALLURGY																										
		AND AT THE LEVEL OF THE COURSES																										
		LEARNING OUTCOMES																										
No.	COURSES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25 2	6 27	/ 28
1	Mathematics 1			х		х																						
2	Physics	х				х				х																		\square
3	General chemistry	х				х	_	х		х																		
4	Introduction to metallurgy	х						х						х						х								
5	Introduction to industrial ecology											х	х									х						
6	Ethics and communications skills					х						х																
7	English language 1											х	х									х						
8	Mathematics 2			х		х																						
9	Inorganic chemistry	х		х																								
10	Engineering drawing and computer graphics				х						х																	
11	Mineralogy and ore deposits								х			х	х															
12	Fundamentals of electrical engineering	х				х				х																		
13	Quality management			х							х								х									
14	Ecotoxicology			х																			х			х		
15	Fundamentals of industrial production											х	х								х							
	English language 2											х	х									х						
17	Physical chemistry	х	х					х																				
18	Fundamentals of physical metallurgy	х								х				х														
19	Fundamentals of metallurgical processes		х		х											х												
20	Engineering thermodynamics		х	х					х							х												
21	Engineering mechanics			х						х	х																	
22	Computer application				х													х										
23	Organic cemistry	х								х												х						
24	Metallurgy of iron	1					х								х	х												

25	Metallurgy of non-ferrous metals			х			х									х	х				х								
26	Fundamentals of heat treatment and welding						Х												х										
27	Chemical analysis techniques					х				х																			
28	Fundamentals of theory of metal forming	х													х						х								
29	Machinery elements			х							х	х																	
30	Computer aided design				х						х																		
31	Production of iron and steel						х								х	х													
32	Hazardous substances in the environment					х																					х	х	
33	Air pollution and protection																					х				х	х	х	
34	Metallurgy of steel	х	х				Х									х													
35	Heat and mass transfer	Х		х			Х		Х								х												
36	Fundamentals of metal casting						Х								х				х										
37	Materials testing									х	х								х										
38	Refractory and carbon materials			х			х							х															
39	Fuels and combustion			х										х															
40	Introduction to entrepreneurship											х	х																
41	Sustainable waste management																								х	х	х		
42	Industrial processes and environment												х											х			х		
43	Metal forming technologies														х		х				х								
44	Fundamentals of metal solidification	х												х					х										
45	Thermodynamics of materials		х					х									х	х											
46	Water pollution and protection			х						х												х							
47	Pollution and protection of soil																								х		х	х	
48	Materials recycling			х																				х			х		
49	Computer programming				х													х											
50	Health and environment																						х			х		х	
51	Labeling of products and packaging			х																							х		
52	Recycling of electrical and electronic waste			х																					х				х
53	Sustainability of foundry processes								х						х									х					
54	Waste characterization					х				х	х												х					х	х
55	Rational use of energy			х			х		х							х													
56	Modern procedures of materials processing						х							х						х	х						х		
57	Introduction to numerical simulation			х	х									х															
58	Metallurgy of ferroalloys			х			х									х													
	TOTAL	12	5	19	6	9	11	4	5	10	7	8	7	7	6	8	4	3	5	2	5	6	3	3	3	4	8	5	2