



SVEUČILIŠTE U ZAGREBU
METALURŠKI FAKULTET

UNIVERSITY OF ZAGREB
FACULTY OF METALLURGY

UNDERGRADUATE STUDY PROGRAM “METALLURGY”



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LEARNING OUTCOMES

1. Explain the physical-chemical fundamentals for the phenomena in nature with natural scientific point of view.
2. Apply computer for data processing and analysis.
3. Apply the skills needed for lifelong learning, including continuing education at the graduate level.
4. Use appropriate literature and prepare and present a professional topic or project on domestic or foreign language.
5. Communicate with colleagues in team problem solving.
6. Apply social, ethical and business principles and standards in the technical profession.
7. Analyze the situation, identify problems and formulate and recommend the optimal solution by using the acquired knowledge.
8. Identify the most important factors affecting the industrial production and business of the organization.
9. Apply thermodynamic laws on production processes.
10. Compare and choose the individual technological process.
11. Use and create technical documentation using computers.
12. Acquire the skills and knowledge of quantitative analysis of natural phenomena.
13. Create simple computer applications.
14. Analyze the present situation and development trends of metallurgy as a profession.
15. Analyze the significance and influence of metallurgy on the overall economy, especially on the national economy.
16. Select a sample and method of sample preparation for analysis and verification of chemical, mechanical, technological and microstructural properties of metallic materials.
17. Plan, implement and manage the production, processing, treatment and application of metallic and non-metallic semi-finished product and the product.
18. Select the appropriate types and explain the properties of metallic materials for a specific application area.
19. Analyze the metallic and nonmetallic materials before and after their use.
20. Develop the skills of logical reasoning and precision in data processing.
21. Apply acquired IT knowledge in engineering practice.
22. Design experiments in which obtained results will be linked to theoretical models.
23. Compare and evaluate the procedures of the rolling of profiles, plates, strips and tubes.
24. Explain and apply production processes of metal castings.
25. Explain the fundamental principles and processes for obtaining non-ferrous metals.
26. Analyze the relationship between microstructure and properties of materials.

27. Identify the conditions of application of refractory and carbon materials in metallurgy and related areas.
28. Create material and thermal balance of certain metallurgical processes.
29. Analyze the present situation and development trends of modern industrial ecology.
30. Analyze the significance and influence of industrial ecology on the overall economy.
31. Propose and adopt plans and programs in order to comply with environmental regulations.
32. Assess possible ecotoxicological effects on plant and animal organisms as well as on human health.
33. Make a sampling on contaminated areas.
34. Evaluate the information and data that are essential for sustainable development.
35. Propose measures to reduce emissions of CO₂ and NO_x in industrial production.
36. Propose solutions for the disposal of waste materials and their recycling.
37. Prepare, process and interpret the data needed to reliably recognize the connection of health and environmental risks.
38. Monitoring and synchronization of states with new laws related to industrial ecology.
39. Prepare and analyze samples from an environmental point of view by using appropriate methods.
40. Analyze the types of ECO labeling of products.
41. Plan characterization of metal and non-metal waste.
42. Define the disposal and recovery of certain type of metallurgical waste.
43. Assess the choice of energy from a technological, economic and environmental point of view.
44. Evaluate the information and data that are essential for sustainable development and propose measures: increasing energy efficiency, substitution of used materials, the introduction and optimization of environmentally friendly industrial processes.
45. Manage the security aspects of the protection of health and the environment at the level of factory and/or municipality/city/county.
46. Analyze the guidelines of sustainable development and their role and place in the national and EU legislation.