

FUNDAMENTALS OF WELDING METALLURGY AND RELATED PROCESSES

ANNOTATION TO THE CURRICULUM OF HIGHER EDUCATION INSTITUTIONS

Speciality: 7-06-0714-02 “Innovative technologies in mechanical engineering”

Profiling: “Welding technologies”

	Form of higher education	
	Full-time (day)	Correspondence
Well	1	1
Semester	2	2
Lectures, hours	34	8
Exam, semester	2	2
Total classroom hours per academic discipline	34	8
Independent work, hours	74	100
Total hours per academic discipline/credit units**	108/3	108/3

1. Brief content of the academic discipline: Structure and properties of metals, iron-carbon diagram, microstructural phases, strengthening phases in steels and alloys, mechanisms of steel hardening, intermetallic, carbide, nitride phases in steels and alloys, welding arc with activating additives, welding arc under water, structure of a welded joint, influence of atmospheric gases on the properties of a weld, reactions involving hydrogen, metallurgical removal of hydrogen from weld metal, theory of diffusion in metals.

2. Learning outcomes

know: mechanisms of formation of microstructural phases; interaction of metals with oxygen, nitrogen, hydrogen; information on the theory of diffusion;

be able to: apply methods to increase resistance to the formation of pores, hot and cold cracks when designing welding technology;

have the skills to assess the technological strength of welded joints.

3. Competencies being developed: SK-9 – Have knowledge about metallurgical processes occurring during welding and surfacing.

4. Requirements and forms of current and intermediate certification: Questions for the exam, exam papers, test tasks