

Discipline Description

1	Discipline	Phase transformations in solids
2	Year of Study, Speciality Specializations	4; 1-31 04 01 Physics (Physicist. Researcher); 1-31 04 01-01 02 Solid-state physics; 1-31 04 01-01 07 Energy physics;
3	Term of Study	6
4	Number of Credits	1.5
5	Tutors	Professor, Doctor of Physics, A. Fedotov
6	Study Objectives	Teaching students basic mechanisms of phase transformations of metals and alloys under the influence of thermal, mechanical and other external impacts that can be used to produce modern materials.
7	Prerequisites	Fundamentals of general physics and mathematics, quantum mechanics, thermal dynamics, statistical physics, Fundamentals of material science
8	Course Content	Thermodynamics of phase transformations in crystalline materials. Melting and crystallization of one-component metallic materials. Mechanisms, models and methods of metallic crystals growth. Diagrams of phase equilibria in two-component metallic materials. Phase transformations in two-component metal alloys. Conditions and methods for changing the grain structure of metals and alloys under thermal and mechanical-thermal impacts. Conditions and methods for creating nanostructured metals and alloys. The relationship between the phase structure, composition and the properties of metals and alloys
9	Literature Recommended	A.K. Fedotov. Energy effective materials. https://dl.bsu.by/pluginfile.php/76002/mod_resource/content/1/EnergyEffectiveMaterialsTEMPUSEng.pdf
10	Methods of Teaching	Lecture courses using modern teaching methods, information and communication technologies, methods of analysis and synthesis
11	Language of Teaching	English
12	Requirements, Current Assessment	Written tests, tests, seminars
13	Form of Current Assessment	Exam