

Review of the Syllabus

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Educational program: 8D07103 – Materials Science and Engineering

Name of the lesson: “PHY3163 – Progressive Technologies of Structural Strengthening”

The syllabus of the course “*Progressive Technologies of Structural Strengthening*” developed for PhD students of the educational program **8D07103 – Materials Science and Engineering** provides a structured and comprehensive overview of advanced technologies used to enhance the structural strength of materials. The course aims to develop professional knowledge and practical skills related to the formation of material structure, phase composition, and properties during production and processing.

The syllabus clearly defines the objectives of the course, which include teaching students to scientifically select the chemical composition of materials, analyze production technologies, and justify processing methods for modern metallic, composite, and functional materials. The learning outcomes emphasize students’ ability to understand progressive processing technologies such as thermomechanical treatment, chemical-thermal processing, and surface hardening methods.

The course content is well organized in a calendar–thematic plan covering key topics such as phase transformations in metals, influence of alloying elements, heat treatment methods, thermomechanical processing, and modern surface engineering techniques. Practical assignments complement theoretical lectures, allowing students to apply their knowledge to real engineering problems and develop analytical and technical skills.


The assessment system is transparent and balanced, including lecture activity, practical tasks, independent work, midterm assessments, and a final examination. The final grade is based on a 100-point system, which ensures an objective evaluation of students’ academic performance and encourages continuous learning throughout the semester.

Overall, the syllabus demonstrates a logical structure, relevant scientific content, and a clear evaluation system. It effectively supports the development of advanced competencies in materials science and modern strengthening technologies, making it suitable for PhD-level training in Materials Science and Engineering.

Reviewer:

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Professor Ali Aliev



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