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Course: Polymer Materials

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LANGUAGES OF EDUCATION: Russian, English

THE SUBJECT of the educational course: a study of the composition, properties, and applications of polymeric materials obtained by reactions of polymerization and polycondensation.

THE GOAL of the course includes the formation of the following **abilities** of students:

- ability to handle large volumes of specific data on the chemical structure, technological features of polymeric materials, their properties and applications;
- possession of basic knowledge on the classification and properties of polymeric materials, production technologies, mechanical and operational properties, application areas;
- ability to predict the relationship between the chemical composition, the structure of high-molecular compounds and performance properties of polymer-based products, understanding of boundary conditions for the application of polymerized materials;
- ability to apply the basic principles of thermodynamics and chemical equilibrium to describe the processes occurring in the operating instructions manual of products from polymeric materials.

THE MAIN TASK OF THE EDUCATIONAL COURSE

Following the demands of an educational-professional program, after the finishing of this course must demonstrate such learning outcomes:

Knowledge:

- ✓ classification of polymeric materials;
- ✓ fundamentals of industrial synthesis of polymers;
- ✓ relationship between structure and properties of polymer materials.

Skills:

- ✓ making the choice of material for use as a base polymer product based on operating conditions and the required properties;
- ✓ defining the conditions and the way polymer material obtaining;
- ✓ choosing a technological method of processing polymers.

Experience:

- ✓ using theoretical basics of the classification of polymeric materials, establishing the relationships between the chemical composition, the structure of the polymers and their physical-mechanical, chemical, and performance characteristics, the use of the knowledge and skills for the design of plastic products.

COURSE DURATION: 24 academic hours of lectures; 18 academic hours of seminars.

REQUIREMENTS TO STUDENTS: knowledge in the field of organic chemistry, general and inorganic chemistry.