PROSPECTS FOR CREATION AND APPLICATION OF NEW MATERIALS IN MECHANICAL ENGINEERING

(course title)

COURSE SYLLABUS ABSTRACT

Speciality: 7-06-0714-02 «Innovative Technologies in Mechanical Engineering»
Specialisation profiling «Innovative technological systems»

	STUDY MODE	
	full-time	part-time
Year	2	2
Semester	3	3
Lectures, hours	34	8
Exam, semester	3	3
Contact hours	34	8
Independent study, hours	68	94
Total course duration in hours / credit units	102/3	

1. Course outline

Upon completion of the course, students will be expected to

know: the purpose of studying the discipline is to provide students with knowledge about the structure, properties and methods of obtaining modern advanced materials used in mechanical engineering.

2. Course learning outcomes

knowledge: fundamental principles of structure and property formation in advanced materials; technological methods for obtaining and managing material properties; areas of application for advanced materials;

be able to: utilize the properties of modern materials to solve practical problems; determine the requirements for materials operating under given operating conditions; identify the most promising materials;

to possess a skill: utilize an integrated approach to selecting the optimal type and composition of materials when solving simple physical and engineering problems; utilize reference, scientific, and technical literature on the physics of materials, methods of their formation, and processing.

3. Competencies:

Solve innovative research problems using information and communication technologies; ensure communication, demonstrate leadership skills, be capable of team building and developing strategic goals and objectives; develop innovative receptivity and the ability to innovate; be capable of predicting the conditions for implementing professional activities and solving professional problems in conditions of uncertainty; use knowledge of the physical foundations of nanotechnology and concentrated energy flows, new materials and prospects for their development in the design of highly efficient technological processes for the manufacture of machine parts; apply information on the theoretical principles, methods and means of research and testing of working machines in the creation of new and modernization of existing machines.

4. Requirements and forms of midcourse evaluation and summative assessment

Current and interim assessments are conducted in written and oral-written form through an oral survey and a written exam.