PHYSICAL AND CHEMICAL METHODS FOR MATERIAL ANALYSIS

(course title)

COURSE SYLLABUS ABSTRACT

6-05-0714-02 Mechanical engineering technology, metal-cutting machines and tools

(speciality code and name)

Equipment and technologies for highly efficient material processing processes

(concentration)

	STUDY MODE
	full-time
Year	4
Semester	7
Lectures, hours	16
Laboratory classes, hours	16
Pass/fail, semester	7
Contact hours	32
Independent work, hours	76
Total course duration in hours / credit units	108/3

1. Course outline

The course "Physicochemical Methods of Materials Research" contains general concepts of spectrophotometric analysis, infrared spectroscopy, and the basics of chromatography methods.

2. Course learning outcomes

Upon completion of the course, students will be expected to **know:**

– the main groups of physicochemical methods used to study chemical compounds and objects of various natures;

– the theoretical foundations of the physicochemical research methods studied;

– the parameters and characteristics used to interpret the data of physicochemical research methods;

be able to:

– plan a general scheme for analyzing chemical and biological objects using modern physicochemical research methods;

– interpret data obtained using the methods being studied to determine the composition and/or identify substances;

to possess a skill:

-analysis of substances using physical and chemical methods within the framework of the laboratory practical course program in the discipline

3. Competencies:

Mastery of this course should ensure the development of the following competencies: Knowledge of the properties, modern methods of physical analysis, and technology for obtaining and processing nanomaterials, and the ability to apply this knowledge to product quality management.

4. Requirements and forms of midcourse evaluation and summative assessment

Current and interim assessment are conducted in written and oral-written forms through laboratory reports with oral defense, a written assessment.