THEORY AND PRACTICE OF ENSURING RELIABILITY, SAFETY AND DURABILITY OF STRUCTURES, BUILDINGS AND FACILITIES

(course title)

COURSE SYLLABUS ABSTRACT

7-06-0732-01 "Construction"

(speciality code and name)

Profiling "Industrial and civil construction"

	STUDY MODE	
	full-time	part-time
Year	**1**	**1**
Semester	1	1
Lectures, hours	50	10
Exam, semester	1	1
Contact hours	50	10
Independent study, hours	166	206
Total course duration in hours / credit units	216/6 c.u	216/6 c.u

1. Course outline.

The study of the discipline "Theory and practice of ensuring the reliability, safety and durability of structures, buildings and structures" is one of the fundamental areas of training masters in the field of construction. When studying the discipline, the following sections and subsections are considered: 1. Introduction and general provisions. 2. Methodology for analyzing the reliability and durability of structures. 3. Influence of the nature of loading on the reliability and durability of building structures. 4. Principles for compiling design combinations of actions in accordance with EN 1990. 5. Elements of fatigue theory. Fatigue failure as a random process. 6. Fundamentals of the theory of reliability. Its application to questions of strength. 7. Probabilistic methods for solving problems based on statistical modeling of random variables and random processes. 8. Reliability of steel structures in the light of the requirements of European and domestic design regulations.

2. Course learning outcomes.

Upon completion of the course, students will be expected to

know: theoretical foundations for ensuring the reliability, safety and durability of building structures, buildings and structures; general requirements for the organization of work to ensure the reliability of the assessment of reliability and safety at all stages of the life cycle of technical systems; reasons for insufficiently high reliability of technical systems; characteristics of technical systems used in reliability theory; main types of failures; laws of distribution of uptime of elements; methods for assessing the reliability of systems of various structures; basic principles and ways to improve the reliability of building structures, buildings and structures;

be able: to analyze the nature and consequences of failures; to quantify the reliability of the elements; study, systematize scientific and technical information, domestic and foreign experience in the direction of research in the field of reliability of building structures; demonstrate the ability and readiness to apply the acquired knowledge in practical activities to assess the reliability indicators of building structures and perform their diagnostics; apply methodological and technical support for measurement and testing processes, taking into account metrological requirements, economic indicators, reliability and technological acceptability;

possess: development of measures to improve the reliability, safety and durability of building structures of buildings and structures; analyze the reliability of typical building structures and their elements, taking into account the static variability of the characteristics of structural materials and loads.

3. Competencies.

As a result of mastering the discipline, the competences of EC-5, EC-6, TPC-1 are formed.

4. Requirements and forms of midcourse evaluation and summative assessment.

Final control in the discipline: exam (1 semester).

Current attestation: survey on topics of lectures (1 semester).