

DIAGNOSTICS OF THE TECHNICAL CONDITION OF BUILDINGS AND STRUCTURES

(course title)

COURSE SYLLABUS ABSTRACT of higher education institution speciality

1-70 02 01 Industrial and Civil Engineering

(speciality code and name)

(specialisation code and name)

| | STUDY MODE | | |
|---|------------|-----------|----------------------------------|
| | full-time | part-time | part-time (shortened program) |
| Year | 4 | 4, 5 | 4 |
| Semester | 8 | 8, 9 | 7, 8 |
| Lectures, hours | 18 | 4 | 4 |
| Practical classes (seminars), hours | 18 | 4 | 4 |
| Course paper, semester | 8 | 9 | 7 |
| Pass/fail, semester | 8 | 8 | 7 |
| Contact hours | 36 | 8 | 8 |
| Independent study, hours | 24 | 52 | 52 |
| Total course duration in hours / credit units | 60/1.5 | | |

1. Course outline

1. Introduction.
2. Inspection of buildings and structures, establishment of their technical condition.
3. Assessment of the technical condition and methods of reinforcement of reinforced concrete structures.
4. Assessment of the technical condition and methods of strengthening stone structures.
5. Assessment of the technical condition and methods of strengthening steel structures.
6. Assessment of the technical condition and methods of strengthening wooden structures.
7. Assessment of the technical condition and methods of strengthening foundations and foundations.
8. Running and capital repairs, restoration, modernization: the composition of project documentation, the main types of work.

2. Course learning outcomes

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

- types of buildings and structures, their structural elements and the operating requirements imposed on them;
- types and mechanisms of aggressive influences, reasons for non-compliance with the operational requirements; space-planning and design features of residential and civil buildings;
- algorithm for assessing the actual technical condition of building structures, methods of their inspection and field tests, defects and damages, their impact on the operational properties of structures, features of verification calculations of building structures;

- methods of restoration and reinforcement of building structures, their classification, examples of calculation and design of reinforcement of structures;
- features of graphic design of project documentation in the design of building repairs;

be able to:

- perform measurement work and draw up measuring drawings;
- determine the cause of defects and damage to building structures of buildings;
- assess the technical condition of structures based on existing defects;
- identify durability and wear of buildings, determine the level of operational reliability of buildings or structures;
- perform verification calculations, including using a PC, establish the need for reinforcement;
- develop recommendations for strengthening building structures;
- perform calculation and design of reinforcement of building structures;.

possess:

- modern methods of inspection of building structures of aboveground and underground parts of the building;
- principles of reinforcement of building structures: reinforced concrete and stone structures, structures made of wood and plastics, metal structures.

3. Competencies

AK-1. Be able to apply basic scientific and theoretical knowledge to solve theoretical and practical problems.

AK-2. Possess systematic and comparative analysis.

AK-3. Possess research skills.

AK-4. Be able to work independently.

AK-5. Be able to generate new ideas (have creativity).

AK-6. Possess an interdisciplinary approach to solving problems.

AK-7. Have skills related to the use of technical devices, information management and computer work.

AK-8. Have oral and written communication skills.

AK-9. Be able to study, improve their skills throughout their lives.

SLK-1. Possess the qualities of citizenship.

SLK-2. Be capable of social interaction.

PC-10. Design structural schemes of buildings and structures of various functional purposes as part of a group of specialists or independently.

PC-12. Perform calculations and construction of building structures using computer-aided design methods.

PC-14. To determine the current directions of scientific research in the field of construction in order to introduce effective building materials, structures and technologies into practice.

PC-15. Organize work on the preparation of abstracts, scientific articles and applications for inventions in the field of industrial and civil engineering.

PC-26. Work with scientific, technical, legal literature in the field of industrial and civil engineering.

4. Requirements and forms of midcourse evaluation and summative assessment

The current certification of students is carried out to determine the compliance of the results of their educational activities with the requirements of educational standards, educational and program documentation of educational programs of higher education. The form of the current certification of students is a credit. The current certification is carried out orally and in writing. The form of intermediate certification is a control work, which is carried out in writing and includes the solution of the problem.

The final assessment of the course paper is the sum of points and protection and is set in

accordance with the scale:

| | | | | | | | | | | |
|------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Assessment | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Points | 100-94 | 93-87 | 86-80 | 79-72 | 71-65 | 64-58 | 57-51 | 50-41 | 40-17 | 16-1 |

The final assessment is determined according to the table:

| | | |
|------------|--------|------|
| Assessment | Pass | Fail |
| Points | 51-100 | 0-50 |