

**EXPERIMENTAL DESIGN AND STATISTICAL PROCESSING OF EXPERIMENTAL  
DATA**  
(course title)

**COURSE SYLLABUS ABSTRACT  
of higher education institution  
speciality**

**7-06-0732-01 "Construction"**  
(speciality code and name)

**"Industrial and civil construction", "Construction of transport facilities"**  
(specialisation code and name)

	STUDY MODE	
	full-time	part-time
Year	1	1
Semester	1	1
Lectures, hours	16	4
Practical classes (seminars), hours	34	8
Contact hours	1	1
Independent study, hours	50	12
Total course duration in hours / credit units	216/6.0	

**1. Course outline**

1. Main information about probability theory and mathematical statistics.
2. Correlation and regression analysis.
3. Fundamentals of error theory.
4. Experimental design.

**2. Course learning outcomes**

Upon completion of the course, students will be expected to

**know:**

- the main experimental design principles, optimality criteria, varieties and rules for constructing experimental plans;
- the basics of correlation, variance and regression analysis;
- methods for optimizing multifactorial objects;
- the relationship between the accuracy of experimental data and the error of devices at the output of which data are recorded;

**be able to:**

- organize work on conducting experimental studies;
- conduct statistical evaluation of experimental results and apply various consent criteria to test statistical hypotheses;
- choose an experiment plan based on the available capabilities and goals of the experiment;
- optimize the object of research;
- analyze the results obtained at the output of experimental data processing devices and their connection with the operation of these devices;

**to possess a skill:**

- planning based on the theory of experiment in solving various engineering problems;

- correlation, regression and variance analysis;
- calculating the error of the experimental data obtained at the output of measuring and specialized devices and the adequacy of experimental models.

### 3. Competencies

SK-5. Use methods of experimental design, mathematical statistics, mathematical analysis and modeling, apply the knowledge gained in research work.

### 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 current student certification is an exam. The current certification is carried out orally and in writing. The form of intermediate certification is a survey on the topics of lectures.

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