

"MATHEMATICAL MODELING OF ENGINEERING FACILITIES AND PROCESSES"

(course title)

COURSE SYLLABUS ABSTRACT

7-06-0714-02 – "Innovative technologies in mechanical engineering"

(specislity code and name)

Mechanical engineering and machine science

Welding technologies

Computer engineering of transport and technological machines

(concentration)

Advanced higher education

	STUDY MODE	
	full-time	part-time
Year	1	1
Semester	1	1
Lectures, hours	16	4
Practical classes, hours	16	4
Exam, semester	1	1
Contact hours	32	8
Independent study, hours	76	100
Total course duration in hours / credit units	108 / 3	

1. Course outline

The purpose of the discipline is to present to students a range of issues related to the construction of empirical mathematical models of technical objects and systems.

2. Course learning outcomes

Upon completion of the course, student will be expected to

know:

- the basic principles of statistical methods for constructing empirical models;
- model quality criteria and measures to ensure them;
- methodological foundations of the experiment;

be able to:

- evaluate the accuracy of experimental data;
- plan experimental studies, determine factors and output variables of empirical models;
- use the least squares criterion and methods of planning factor experiments to build models;
- evaluate the quality of empirical models;

to possess a skill:

- possession of computer tools for processing and analyzing research results.

3. Competencies

Codes of formed competencies	The names of the competencies being formed
UK-1	Apply methods of scientific cognition in research activities, generate and implement innovative ideas
UK-2	Solve research and innovation tasks based on the use of information and communication technologies
UK-4	Provide communication, demonstrate leadership skills, be capable of team building and the development of strategic goals and objectives
UK-5	Develop innovative receptivity and ability to innovate
UK-6	Be able to predict the conditions for the implementation of professional activities and solve professional tasks in conditions of uncertainty
UPK-1	To choose methods of mathematical modeling of technical objects and processes of manufacturing machine parts using computer technology to solve practical problems
UPK-2	Optimize equipment and tooling designs, mechanical assembly production technologies

4. Requirements and forms of midcourse evaluation and summative assessment

To assess the level of knowledge of students, the following diagnostic tools are used: reports on practical work with their oral defense; passing the exam.