

OPTIMIZATION OF DESIGN SOLUTIONS

(course title)

COURSE SYLLABUS ABSTRACT of higher education institution

Speciality 1-40 05 01 «Information systems and technologies (by directions)»

	STUDY MODE	
	full-time	part-time (shortened program)
Year	3, 4	3
Semester	6, 7	5, 6
Lectures, hours	50	12
Laboratory classes, hours	68	14
Pass/fail, semester	6	5
Exam, semester	7	6
Contact hours	118	26
Independent study, hours	106	198
Total course duration in hours / credit units	224 / 6	

1. Course outline: optimal design problems, unconstrained optimization methods, conditional optimization methods, linear programming, dynamic programming, discrete programming, multiobjective optimization, scheduling theory problems.

2. Course learning outcomes. The student who has studied the discipline must:

know – optimization research strategy, methods for constructing optimization models under certainty and uncertainty, the structure and capabilities of optimization modules of modern decision support systems and automation of engineering calculations;

be able to – to implement the solution of multicriteria optimization problems in design and production problems using application software packages, including interactive ones; develop software for optimizing design solutions in various areas; solve optimization problems in one of the modern decision support systems and automation of engineering calculations;

possess – methods for solving optimization problems; skills in working with optimization modules of modern decision support systems and automation of engineering calculations.

3. Competencies. AK-1: be able to apply basic scientific and technical knowledge to solve theoretical and practical problems. AK-2: master systemic and comparative analysis. AK-3: have research skills. AK-4: be able to work independently. AK-5: be able to generate new ideas (be creative). AK-6: have an interdisciplinary approach to problem solving. AK-7: have skills related to the use of technical devices, information management and computer work. AK-8: Possess oral and written communication skills. AK-9: be able to learn, improve their skills throughout their lives. AK-10: use the basic laws of natural sciences in professional activities. AK-11: master the basic methods, ways and means of obtaining, storing, processing information using computer technology. AK-14: organize your work on a scientific basis, independently evaluate the results of your activities. SLK-6: be able to work in a team. PK-2: master the principles and basic skills, techniques, methods for setting up, adapting and maintaining software tools. PK-3: analyze and justify the choice of hardware, software and systems for automated support of professional activity processes. PK-4: develop software tools and systems for providing automated support for solving problems of professional activity. PK-11: develop functional, informational and other models of a formalized representation of the processes of professional activity. PK-21: Analyze and evaluate collected data. PK-33: develop optimization models for solving design and production problems.

4. Requirements and forms of midcourse evaluation and summative assessment. Current certification: ZLR – defense of laboratory work; PKU – intermediate control of progress. Intermediate certification: pass/fail, exam. Assessment of the level of knowledge of the student and the formation of competencies in all forms of control is carried out on a ten-point scale.