

# METHODS OF MATHEMATICAL PROGRAMMING

(course title)

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

1-25 01 07 Economics and management at the enterprise

	STUDY MODE	
	full-time	part-time (shortened program)
Year	3	4
Semester	5	7
Lectures, hours	42	8
Laboratory classes, hours	36	6
Contact hours	78	14
Course project, semester	6	8
Independent study, hours	42	106
Exam, semester	5	7
Total course duration in hours / credit units	120/3	

### 1. Course outline

The course is based on the basic methods of optimization in economics and covers the following topics: basic concepts of linear programming; basic concepts of linear vector analysis; simplex method for solving linear programming problems; duality in linear programming; transport problems; integer programming; elements of the theory of matrix games; inventory management methods; methods of modeling economic processes.

### 2. Course learning outcomes

Upon completion of the course, students will be expected to

- know: the state and prospects of development of mathematical programming methods; the scientific basis and theory of linear, integer and dynamic programming; a set of scientific methods for solving problems of effective management of organizational and economic systems; problem solving methods and fundamental ideas underlying optimization methods

- be able to: to form the initial data for the formulation and development of optimization management tasks; to set and solve specific optimization management tasks; - to use application software packages to solve optimization management tasks; to process and analyze the results; to work with literature.

- possess: possess systematic and comparative analysis; interdisciplinary approach in solving economic problems; methods of mathematical modeling

### 3. Competencies

AK-1 Be able to apply basic scientific and theoretical knowledge to solve theoretical and practical problems. AK-2 Possess system and comparative analysis. AK-3 possess research skills.

SLK-6 Be able to work in a team. PK-5 Possess modern management decision-making techniques.

PK-18 Systematize statistical materials on labor that characterize quantitative and qualitative indicators of the organization (enterprise) and its divisions. PK-19 study the results of the work of the organization (enterprise) and its structural divisions and compare them with the indicators of other organizations (enterprises). PK-20 Identify on-farm reserves and develop measures for their use.

PK-21 To conduct an operational economic analysis of the implementation of planned tasks and measures for the use of reserves to increase the efficiency of production and economic activities. PK-27 Substantiate the system of indicators and methods for assessing the economic efficiency of the functioning of the organization (enterprise), individual activities and structural units.

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

- oral (oral interview during laboratory classes; defense of laboratory work; interview during individual and group consultations)

- written (tests; control surveys, written reports on laboratory classes)

- oral-written (reports on classroom laboratory classes with their oral defense, passing the test).