



Syllabus of the educational discipline
 «Operation Research and Optimization Methods»

Specialty	051 Economics
Study Programme	International economics
Study cycle (Bachelor, Master, PhD)	the first (Bachelor) level of higher education
Course status	Mandatory
Language	English
Term	second course, first semester
ECTS credits	5
Workload	Lectures – 24 hours. Practical studies – 12 hours. Laboratory studies – 12 hours. Self-study – 102 hours.
Assessment system	Grading including Exam
Department	Department of Higher Mathematics, Economic and Mathematic Methods, auditorium 329 of the main building phone: (057)702-04-05 (add. 3-33) website: http://www.vm.hneu.edu.ua/
Teaching staff	Ievgeniia Iuriivna Misiura, PhD in Technics, Associate professor
Contacts	Ie. Iu. Misiura ievgeniia.misiura@hneu.net
Course schedule	Lectures: according to the schedule Practical studies: according to the schedule Laboratory studies: according to the schedule
Consultations	At the Department of Higher Mathematics, Economic and Mathematic Methods, offline, according to the schedule, individual, PNS chat.

Learning objectives and skills:

form future specialists' mathematical knowledge for solving theoretical and practical economic problems in any sphere of a professional activity, master skills in analytical thinking and skills in using mathematical knowledge for formation of real processes and developments and for solving economic problems

Structural and logical scheme of studying the academic discipline:

Previous academic disciplines	Next academic disciplines
Higher mathematics	Econometrics
Probability theory and mathematical statistics	Statistics
	Economic and mathematical methods and their realization using PC

Content of the educational discipline

Module 1. Basic notions of mathematical modeling of economic systems. Methods of linear programming. Integer programming

Theme 1. Optimization economic and mathematical methods and models

Theme 2. Problems of linear programming and methods for solving them

Theme 3. Duality theory and analysis of linear models of economic optimization problems in international economics

Theme 4. The transportation problem and its application to international economics

Theme 5. Integer programming



Module 2. Methods of nonlinear and dynamic programming. Game theory. Queuing systems and inventory management

Theme 6. Nonlinear optimization models of economic systems

Theme 7. Game theory. Analysis and risk management in international economics on the base of the concept of game theory

Theme 8. Dynamic programming

Theme 9. Multicriteria optimization problems and methods for solving them

Theme 10. Network planning and management methods

Theme 11. Models of inventory management

Theme 12. Models of queuing systems

Teaching environment (software)

Multimedia projector, S. Kuznets PNS, Corporate Zoom system, software: MS Excel

Assessment system

Assessment of students' learning outcomes is carried out by the University according to the cumulative 100-point system.

Current control is carried out during lectures and practical (seminar) classes and aims to assess the level of students' readiness to perform particular tasks, and it is assessed by the amount of scored points.

The maximum amount during the semester – 60 points; the minimum amount required is 35 points.

Final control is carried out at the end of the semester in the form of an exam (the maximum amount is 40 points, the minimum amount required is 25 points).

Current control includes the following assessment methods: homework; defence of laboratory works; a written test; an independent creative work, a colloquium.

More detailed information on assessment and grading system is given in the technological card of the course.

Course policies

Teaching of the academic discipline is based on the principles of academic integrity.

Violation of academic integrity includes academic plagiarism, fabrication, falsification, cheating, deception, bribery, and biased assessment.

Education seekers may be brought to the following academic responsibility for breach of academic integrity: repeated assessment of the corresponding type of learning activity.

More detailed information about competencies, learning outcomes, teaching methods, assessment forms, self-study is given in the Course program