



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

Specialty	051 Economics
Educational program	International economics
Level of education	first(bachelor)
Discipline status	Base
Teaching language	English
Course / semester	2 nd course, 3 rd semester
Number of credits ECTS	5
Distribution by types of trainings and hours of study	Lectures – 24.hours. Practical studies (seminars) – 12 hours. Laboratory studies – 12 hours. Independent training – 102 hours.
Form of final assessment	Exam /Pass
Department	Department of higher mathematics, economical and mathematical methods, Simon Kuznets KNUE, room 329 (main building), +38(057)702-04-05 (or 3-33), E-mail: kafmath@hneu.edu.ua , http://www.vm.hneu.edu.ua/
Teacher (-s)	MisiuraIevgeniiaIuriivna, PhD, associate professor
Teacher's contacts	misuraeu@gmail.com
Days of the classes	Wednesday
Consultations	Distance, according to the schedule
The purpose of the discipline is	
forming future specialists' basic mathematical knowledge for solving theoretical and practical problems in professional activity of a competent specialist in any sphere of his activity, skills in analytical thinking and skills in using mathematical knowledge for formation of real processes and developments, and for solving economic problems.	
Prerequisitesforlearning	
<i>Assimilation of the material ofthedisciplines "Higher mathematics" and "Probability theory and Mathematical statistics"</i>	
Content of the educational discipline	
Content 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 Theme 4. The transportation problem Theme 5. Integer programming Theme 6. Nonlinear optimization models of economic systems Content module 2. Methods of nonlinear and dynamic programming. Game theory. Queuing systems and inventory management Theme 7. Game theory. Analysis and risk management in economics on the basis of the concept of game theory Theme 8. Dynamic programming Theme 9. Network planning and management methods Theme 10. Models of inventory management Theme 11. Models of queuing systems	
Material and technical support (software) of the discipline	
Software <i>MS Excel</i>	
Course page on the Moodle platform (personal training system)	<i>Syllabus (working program), working plan (technological card), recommended literature, journal of students' attendance, materials of lectures (notes and presentations), questions to independent work, guidelines to conducting practical and laboratory studies, tasks for independent work, tests for checking students' knowledge, example of an examination paper and a criteria of an assessment of examination work.</i> https://pns.hneu.edu.ua/course/view.php?id=5366

**Recommended literature**

1. Малярець Л. М. Дослідження операцій та методи оптимізації : практикум у 2-х ч. Частина 1 / Л. М. Малярець, І. Л. Лебедева, Л. О. Норік. – Харків : ХНЕУ ім. С. Кузнеця, 2017. – 164 с. 2. Малярець Л. М. Економіко-математичні методи та моделі : навчальний посібник / Л. М. Малярець. – Харків : Вид. ХНЕУ ім. С. Кузнеця, 2014. – 412 с. 3. Сторшин А. А. Лабораторний практикум з економетрики в Excel : навчально-практичний посібник / О. О. Сторшин, Л. М. Малярець. – Харків : Вид. ХНЕУ, 2011. – 140 с. 4. Малярець Л. М. Економіко-математичні методи та моделі: навчальний посібник / Л. М. Малярець, Е. Ю. Железнякова, Є. Ю. Місюра. – Харків : Вид. ХНЕУ ім. С. Кузнеця, 2011. – 320 с. 5. Збірник вправ з навчальної дисципліни «Економіко-математичне моделювання» для студентів усіх галузей знань усіх форм навчання / укл. Л. М. Малярець, Е. Ю. Железнякова, Л. О. Норік. – Х. : Вид. ХНЕУ, 2009. – 88 с. 6. Лебедева І. Л. Лабораторний практикум з оптимізаційних методів та моделей навчальної дисципліни «Економіко-математичні методи та моделі» : навчальний посібник / І. Л. Лебедева, Л. О. Норік – Харків : Вид. ХНЕУ, 2012. – 216 с. 7. Дослідження операцій та методи оптимізації: методичні рекомендації і завдання до виконання контрольних робіт для студентів усіх спеціальностей першого (бакалаврського) рівня/ уклад. Л. М. Малярець, О. В. Мінєнкова. – Харків : Вид. ХНЕУ ім. С. Кузнеця, 2017. – 44 с. 8. Методичні рекомендації до виконання контрольних робіт з навчальної дисципліни «Економіко-математичне моделювання» для студентів усіх напрямків підготовки заочної форми навчання / уклад. Л. М. Малярець, Е. Ю. Железнякова, І. Л. Лебедева, Л. О. Норік. – Харків : Вид. ХНЕУ, 2008. – 36 с. 9. Таха Х. А. Введение в исследование операций / Х. А. Таха ; пер. с англ. – 7-е изд. – М. : ИД «Вильямс», 2005. – 912 с.

Assessment system of learning outcomes

Current control is carried out on a cumulative 100-point system (the maximum is 60 points; the minimum that allows a student to take the exam is 35); final control is conducted in the form of an exam according to the schedule of the educational process (maximum is 40 points, minimum is 25 points). More detailed information on assessment is given in the technological card of the discipline.

Accumulation of rating points in the discipline (example)

Types of training	Max points
Homework	8
Competence oriented tasks	12
Written tests	18
Independent creative task	8
Colloquiums	14
Exam	40
Max points	100

Transference of Simon Kuznets KHNUE Characteristics of Students' Progress into the System of the ECTS Scale

Total score on a 100-point scale	ECTS assessment scale	Assessment on the national scale	
		for exam, differentiated test, course project (work), practice, training	for pass
90 – 100	A	excellent	pass
82 – 89	B	good	
74 – 81	C	satisfactory	
64 – 73	D		
60 – 63	E	unsatisfactory	not pass
35 – 59	FX		
1 – 34	F		

Discipline policies

Policy of academic integrity (according to the Law of Ukraine "On Education") - "Teaching discipline is based on the principles of academic integrity - a set of ethical principles and statutory rules that should guide participants in the educational process during training, teaching and conducting scientific (creative) activities to ensure confidence in learning outcomes and / or scientific (creative) achievements. Violations of academic integrity are: academic plagiarism, self-plagiarism, fabrication, falsification, write-off, deception, bribery, biased evaluation. For violation of academic integrity, students may be held subject to the following academic liability: re-assessment (test, exam, test, etc.); re-passing the relevant educational component of the educational program. Write-off during control (modular) works is forbidden (including with use of mobile devices). <https://www.hneu.edu.ua/akademichna-dobrochesnist/>

More detailed information about competencies, learning outcomes, teaching methods, assessment forms, independent training is given in the Syllabus (working plan) of the educational discipline (<http://repository.hneu.edu.ua/handle/123456789/19993>).