Course Lecturer	**Liudmyla Galaieva (Галаєва Людмила Валентинівна)** Associate Professor, Ph.D., Department of Economy Cybernetics
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Virtual Office Hours (eLearn)	https://elearn.nubip.edu.ua/course/view.php?id=0312

DESCRIPTION OF THE COURSE

The Academic Discipline "Economic-mathematical methods and models" belongs to series of disciplines that form the profile of the future specialist, equipping him with basic knowledge of the theory and practice in the application of economic and mathematical methods and models, because economic systems can't be effectively studied without using the modern theoretical methods and practical experiment.

An effective management of all economic processes is based both on knowledge of their specific features and the study of difficult connections that exist among the economic phenomena, the ability to foresee the consequences of the latter or other economic measures and also in financial systems.

Aim – to get students acquainted with basic knowledge of the Economic-mathematical methods and models and knowledge transfer from modern mathematics which would enable learners to work with special models in practice.

Objectives are:
•   to learn the main concepts of "Economic-mathematical methods and models"
•   to develop logical thought and skills to solve practical tasks in financial systems;
•   to define special probability distributions, to analyze and to make decision in economy and financial systems.

Acquisition of competencies:
Integrated competency (IC):
Ability to solve complex specialized tasks and practical problems in the field of finance, banking and insurance in the course of professional activity or in the process training, which involves the use of certain methods and provisions of financial science and is characterized uncertainty of conditions and the need to take into account the complex requirements for professional and educational activities.
General competencies (GC):
GC5. Skills of using information and communication technologies.

Special (professional, substantive) competence (SC):

SC 4. Ability to apply economic and mathematical methods and models for solving financial problems.

Expected Learning Outcomes (ELO):

ELO6. Apply economic and mathematical methods and models to solve financial problems.

ELO8. Apply specialized information systems, modern financial technologies and software products.

COURSE STRUCTURE

Topics	Hours (lectures / laboratory classes)	Learning outcomes	Tasks	Knowledge assessment
Semester # 6				
Module # 1. "Mathematical Programming"				
Topic 1. Bases of Economic Mathematical Modeling. The main concepts of Optimization Models and Methods.	2/2	To know the main concepts of Mathematical Programming and Modeling: the modern theory; theorems, methods; essence and history of the academic discipline; studying the main methods for solving the problems of the course; realization of formal research received by the solver.	Performing practical tasks, self-study work using information technology tools in elearn.	10
Topic 2. Linear Programming. Methods for solving Linear Programming Problems..	4/8			20
Topic 3. Special Methods and Models.	2/4			20
Topic 4. Nonlinear Programming Problems.	1/1			20
Test and task to Module # 1				30
Total for Content Module 1	9/15			100
Module # 2. "Mathematical Modelling"				
Topic 5. The System of Models in Agriculture.	2/7	To know the main concepts of Mathematical Modelling: the modern theory, studying the main types of models for solving the problems of the course; realization of formal research received by the solver; performance of the analysis of the solution.	Performing practical tasks, self-study work using information technology tools in elearn.	20
Topic 6. Some sections of modeling (Financial, Risk etc.)	4/8			30
Test to Module # 2				**30**
Total for Content Module 2	6/15			100
Total, hours	**15/30**			
Total for educational work	$R_{EW} = \dfrac{0{,}7 \cdot (R_{MOD\,1} + R_{MOD\,2})}{2}$			70
Certification (**Exam**)				**30**
Total	$R_{DIC} = R_{EW} + R_{CER}$			**100**

ASSESSMENT POLICY

Deadline and reassembly policy:	Works that are submitted in violation of deadlines without good reason are evaluated at a lower grade. Relocation of modules takes place with the permission of the teachers who provide the course, if there are serious reasons (for example, hospital).
Academic Integrity Policy:	Copying of the text during written tests and exams is prohibited. The use of mobile devices is allowed only with the permission of the teacher during online testing and preparation of practical tasks. Self-Study works in the form of abstracts, reports, presentations must have correct text links to the information sources used.
Attendance Policy:	Attendance is mandatory. For objective reasons (for example, illness, international internship) training can take place individually at a distance (online form in agreement with the dean of the faculty and the lecturer of the course).

STUDENT EVALUATION SCALE

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

RECOMMENDED SOURCES OF INFORMATION

1. Carl P. Simon, Lawrence Blume. Mathematics for economists. New York, London: W.W.Norton & Company, 1994. 930p.

2. Cox D., Cox M. The Mathematics of Banking and Finance. The Atrium, Southern Gate, Chichester, John Wiley & Sons Ltd, 2006. 312 p.

3. Dantzig, G.B. Linear Programming and Extensions. Princeton, NJ: Princeton University Press, 1998. 656 p.

4. Drury C. Management and cost accounting. C&C Offset, China, 2008. 775p.

5. Galaieva L, Shulga N, Lipska V. Optimization Methods and Models. Kyiv: Printed Centre CP «Komprint», 2016. 259 p.

6. Kravchenko V.M., Galaieva L.V., Shulga N.G. Applied modeling: Economic and mathematical modeling. Kyiv: NULESU, 2023. 363 p.

7. Market outlook report URL: http://www.agr.gc.ca/pol/mad-dam/index_e.php?s1=pubs&s2=rmar&s3=php&page=rmar_01_01_2009-04-17

8. Peter B.R. Hazell, Roger Norton. Mathematical programming for economic analysis in agriculture. Macmillan Publishing Company, 1986. 400p.

9. Ruric E. Wheller, W.D. Peeples, Jr. Modern Mathematics with Applications to Business and the Social Sciences. Fourth Edition. Monterey, California: Brooks/Cole Publishing Company, 1986. 707p.

10. Taha Hamdy A. Operations Research. An sntroduction/ Tenth Edition. Pearson Education Limited; 2017. 849 p.

11. Tan S.T. Calculus for the Managerial, Life, and Social Sciences. Tenth Edition. Brooks. Cengage Learning, 2014. 720p.

12.   Waters D. Supply Chain Management: An Introduction to Logistics. 2nd Edition. Bloomsbury Publishing, 2019. 384 p.

13.   Галаєва Л.В., Рогоза Н.А., Шульга Н.Г. Математичні моделі аграрного сектору: навч.посібн. Київ: ЦП "Компрінт", 2024. 484с.

14.   Галаєва Л.В., Рогоза Н.А., Шульга Н.Г. Дослідження операцій Ч.1: навч. посібн. К.: ЦП «Компринт», 2018. 290 с.

15.   Жадлун З.О., Галаєва Л.В., Шульга Н.Г. Економіко-математичне моделювання з основами математичного програмування: навч.посібн. Київ: ТОВ "Agrar Media Group", 2016. 266с.

16.   Офіційний сайт Державного Комітету статистики України. URL: http://ukrstat.gov.ua/

17.   Офіційний сайт Євростату. URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home

18.   Офіційний сайт Кабінету Міністрів України. URL: http://www.kmu.gov.ua/control/

19.   Офіційний сайт Міністерства економічного розвитку і торгівлі України. URL: http://www.kmu.gov.ua

20.   Офіційний сайт Продовольчої та сільськогосподарської організації ООН (ФАО). URL: http://www.fao.org/

21.   Офіційний сайт Світового банку. URL: http://www.worldbank.org/

22.   Підгорний А. З., Погорєлова Т. В. Фінансова статистика: навчальний посібник. Київ: ФОП Гуляєва В.М., 2020. 204 с.

23.   Провост Ф., Фоусет Т. Data Science для бізнесу. Як збирати, аналізувати і використовувати дані. Видавництво: Наш формат, 2019. 400 с.