SYLLABUS OF THE ACADEMIC DISCIPLINE
"Economic-mathematical methods and models"

Level of Higher Education - "Bachelor"
Field of Knowledge: 05 "Social and Behavioral Sciences".
Specialty**:** 051 "Economics"
Educational and professional program of Study "Economics enterprises"
Year of Study**:** 3, Semester**:** 6
The form of study**:** Full-time study
The number of ECTS credits**:** 4
Language of instruction: English

Course Lecturer	**Liudmyla Galaieva (Галаєва Людмила Валентинівна)** Associate Professor, Ph.D., Department of Economy Cybernetics
Contact Information (e-mail)	**Office Phone:** 527-85-67; mob. (+38) 098 - 905 - 63 - 95 **e-mail:** lgalaeva@nubip.edu.ua
Virtual Office Hours (eLearn)	https://elearn.nubip.edu.ua/course/view.php?id=701

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.

The purpose of studying this course is to form future specialists in modern thinking and give them a system of fundamental theoretical knowledge of economic-mathematical methods and models, and applied practical skills using information technology tools (including MS Excel, etc.); acquiring skills in research and analysis of economic processes and phenomena to make efficient management decisions.

The task of studying the discipline is theoretical and practical training of students on the methodology and methods of researching the economic processes and phenomena using the tools of economic and mathematical modeling.

The discipline provides the formation of a number of competencies:

General competencies (GC):

GC2. Ability to preserve moral, cultural, scientific values and increase the achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology, use different types and forms of physical activity rest and lead a healthy lifestyle

GC3. Ability to abstract thinking, analysis and synthesis.

GC4. Ability to apply knowledge in practical situations.

GC7. Skills in the use of information and communication technologies.

GC8. Ability to search, process and analyze information from various sources.
GC11. Ability to make informed decisions.

Professional competencies of the specialty - Special competencies (SC):

SC4. Ability to explain economic and social processes and phenomena on the basis of theoretical models, analyze and interpret the results.
SC6. Ability to apply economic and mathematical methods and models to solve economic problems.
SC7. Ability to use computer technology and data processing software to solve economic problems, analyze information and prepare analytical reports.
SC8. Ability to analyze and solve problems in the field of economic and social relations.
SC9.Ability to predict on the basis of standard theoretical and econometric models of socio-economic processes.
SC11. Ability to justify economic decisions based on understanding the laws of economic systems and processes and using modern methodological tools.
SC12. Ability to independently identify problems of an economic nature in the analysis of specific situations, to suggest ways to solve them.

Program learning outcomes (PLO):

PLO5. Apply analytical and methodological tools to substantiate proposals and make management decisions by various economic agents (individuals, households, enterprises and public authorities).
PLO8. Apply appropriate economic and mathematical methods and models to solve economic problems.
PLO10. To analyze the functioning and development of economic entities, to determine the functional areas, to calculate the relevant indicators that characterize the effectiveness of their activities.
PLO12. Apply the acquired theoretical knowledge to solve practical problems and meaningfully interpret the results.
PLO16. Be able to use data, provide arguments, critically evaluate logic and draw conclusions from scientific and analytical texts on economics.
PLO19. Use information and communication technologies to solve socio-economic problems, prepare and present analytical reports

COURSE STRUCTURE

Topics	Hours (lectures / laboratory classes)	Learning outcomes	Tasks	Knowledge assessment
Semester # 6				
Module # 1				
Topic 1. The Subject of Mathematical Programming	1/5	To know the main concepts of Mathematical Programming: the modern theory; theorems, methods; essence and history of the academic discipline; studying the main methods for solving the problems of	Performing practical tasks, self-study work using information technology	10
Topic 2. Simplex Method. Dual Problem in Linear Programming.	2/5			20

Topic 3. Transportation Problem.	2/5	the course; realization of formal research received by the solver.	tools in elearn.	20
Topic 4. Special Tasks.	2/5			20
Test and task to Module # 1				30
Total (on the content of module # 1)				100
Module # 2				
Topic 5. Theoretical Basis of Mathematical Modelling.	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. The System of Models at research of Production Processes in Agriculture.	2/9			20
Topic 7. Some sections of the Economic and Mathematical Modelling.	4/9			30
Test to Module # 2				**30**
Total (on the content of module # 2)				**100**
Total for educational work	$R_{EW} = \frac{0{,}7 \cdot (R_{MOD\,1} + R_{MOD\,2})}{2}$			**70**
Certification (**Exam)**				**30**
Total	$R_{DIC} = R_{EW} + R_{CER}$			**100**

EVALUATION 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

National Grade	Rating of the Higher Education Learners, Score
“Excellent”	90 - 100
“Good”	74 - 89
“Satisfactory”	60 - 73
“Failed”	0 - 59