



Lesya Ukrainka Volyn National University

**Department of General Mathematics
and Methods of Teaching Informatics**

SYLLABUS

Name of the course:

«MATHEMATICS AND STATISTICS FOR ECONOMISTS»

Level of the higher education	Bachelor
Field of knowledge	29 – International Relations
Speciality	292 – International Economic Relations
Educational program	International Business
Educational level	Bachelor of International Economic Relations
Professional qualification	expert in International business and translation (English)
Form of education	Full-time education
Developer (lecturer)	Myroniuk Liliia Pavlivna , PhD, associated professor
Contact information	E-mail: Myroniuk.Liliia@vnu.edu.ua Phone number: 063 396 16 43
Semester, year of study	I, II, III semesters; I, II years of study
The scope of the discipline	Total hours: 7 credits / 210 hours Lectures: 54 hours. Practical classes : 26 hours. Laboratory lessons: 26 hours. Consultations: 12 hours. Self study: 92 hours.
Form of control	Ist semester – exam; IInd semester – test; IIIrd semester – exam
Timetable	Classes are held according to the schedule: http://194.44.187.20/cgi-bin/timetable.cgi?n=700 Consultations of the teacher are carried out according to the approved schedule.
Language of study	English
Discipline abstract	The discipline « <i>Mathematics and Statistics for Economists</i> » belongs to the cycle of professional training, which provides the study of <ul style="list-style-type: none"> • basic principles and tools of the mathematical apparatus which is used to solve theoretical and applied problems of business processes and international activities; • mathematical methods of systematization, processing and application of statistical data for the development of analytical models related to their further practical activities as specialists in the field of international business. The subject of study of the discipline « <i>Mathematics and Statistics for Economists</i> » is elements of linear and vector algebra; elements of analytical geometry; introduction to mathematical analysis and elements of differential calculus; elements of integral calculus; numerical and functional series; differential equations; basic concepts, formulas, statements of statistics.
Prerequisites of the course	Knowledge of the basic concepts of school courses in algebra and the beginnings of analysis, geometry in the scope of the secondary school program.

Postrequisites of the course	Direct application of learning outcomes in the study of disciplines «Information Technology in International Relations», «Theory of International Economic Relations», «World Economy and World Markets», «International Monetary and Financial Relations», «Firm Economics», «Business analytics», «Management and marketing in international business».
The aim of the course	Providing students with basic knowledge of higher mathematics and statistics, which allow them to further master special disciplines based on mathematical concepts. Much attention is paid to the development of practical skills in solving professional problems, the ability to apply mathematical methods and statistical apparatus to study real processes and make optimal decisions.
Learning outcomes	<p>The discipline «<i>Mathematics and Statistics for Economists</i>» is aimed at the formation of the following general and special (professional) competencies:</p> <ul style="list-style-type: none"> – GC 1. The ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic). – GC 3. Ability to learn and be modernly trained. – GC 6. Ability to communicate in foreign languages. – GC 7. Skills in the use of information and communication technologies. – GC 8. Ability to abstract thinking, analysis and synthesis. – GC 10. Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity). – GC 12. Knowledge and understanding of the subject area and understanding of professional activity. – PC 2. Ability to use basic categories and the latest theories, concepts, technologies and methods in the field of international economic relations, taking into account their basic forms, to apply theoretical knowledge about the functioning and development of international economic relations. – PC 3. Ability to identify features of the functioning of the environment of international economic relations and models of economic development. – PC 11. Ability to conduct research on economic phenomena and processes in the international sphere, taking into account causal and spatio-temporal relationships. – PC 16. The ability to constantly improve the theoretical level of knowledge, generate and effectively use them in practice. – PC 20. Ability to search, critically evaluate and process information from various sources in the field of international business; generate conclusions, recommendations and proposals, new original ideas for (re) organization of business, planning and modeling of business processes and strategic (including anti-crisis) management. <p>Mastering the content of the discipline allows to get the following results:</p> <ul style="list-style-type: none"> – PR 1. Treat professional self-improvement responsibly, aware of the need for lifelong learning, show tolerance and readiness for innovative change. – PR 3. Use modern information and communication technologies, general and special purpose software packages. – PR 10. Identify and identify the features of the functioning of the subjects of international relations and models of their economic development. – PR 13. Select and skillfully apply analytical tools to study the state and prospects of development of individual segments of international markets for goods and services using modern knowledge of methods, forms and tools of international trade regulation. – PR 14. Understand and apply theories, principles, tools and instruments for

Content module 2. The elements of Analytic Geometry							
Theme 5. Straight line on plane and its equations. The angle between the straight lines.	4	2		2			CT/ 4 points
Theme 6. Application of methods of analytical geometry for solving economic problems: market equilibrium model; the balance of income and loss of companies; budget sets and budget constraint lines.	13			2	10	1	CT/ 6 points
Theme 7. Plane and its equations. Straight line in the space.	7	2	2		2	1	SS/ 6 points
Theme 8. Second-order curves.	13	4	2	2	5		CT/ 4 points
Total for module 2	37 hours	8 hours	4 hours	6 hours	17 hours	2 hours	20 points
Module test №2							KP/ 30 points
Total for semester: hours / points	70 hours	18hou rs	8 hours	10hou rs	30hour s	4 hours	100 points
Module tests							60 points
Form of control	exam						
II SEMESTER							
Content module 1. Introduction to mathematical analysis. The elements of Differential Calculus							
Theme 1. Limit of a numerical sequence. Limit of a function.	4	2	1				SS/ 2 points
Theme 2. Continuity of the function.	3	2	1			1	SS/ 2 points
Theme 3. Derivative of the first and higher orders. Differential. Application of the derivative to the study of functions.	11	4		2	5		CT/ 8 points
Theme 4. Elements of differential calculus of a function of two variables.	5	2	2			1	SS/ 2 points
Theme 5. Application of functions and derivative in economic theory.	12			2	10		CT/ 6 points
Total for module 1	35 hours	10 hours	4 hours	4 hours	15 hours	2 hours	20 points
Module test №1							MT/ 30 points

Content module 2. The elements of Integral Calculus							
Theme 6. Antiderivative and indefinite integral. Basic methods of integrating indefinite integrals.	12	4	2		5	1	SS/ 6 points
Theme 7. Definite integral, its application. Improper integrals.	7	4	2			1	SS/ 6 points
Theme 8. Application of integration methods in economic theory.	14			4	10		CT/ 8 points
Разом за модулем 2	33 hours	8 hours	4 hours	4 hours	15 hours	2 hours	20 points
Module test №2							MT/ 30 points
Total for semester: hours / points	68 hours	18 hours	8 hours	8 hours	30 hours	4 hours	40 points
Module tests							60 points
Form of control	test						100 points
III SEMESTER							
Content module 1. Differential Equations. Numerical and Functional Series							
Theme 1. Basic concepts of the theory of differential equations. First-order differential equations: with separable variables; homogeneous; linear.	14	6	4		3	1	SS/ 6 points
Theme 2. Differential equations and their systems as mathematical models of economic processes.	14		2	2	10		CT/ 8 points
Theme 3. Numerical and Functional Series.	10	4	2		3	1	SS/ 6 points
Total for module 2	38 hours	10 hours	8 hours	2 hours	16 hours	2 hours	20 points
Module test №1							MT/ 30 points
Content module 2. Statistics							
Theme 4. Methodological principles of statistics and presentation of statistical data.	12	4	2	2	3	1	SS+CT/ 6 points
Theme 5. Statistical methods of analysis of socio-economic phenomena and processes.	10	4		2	3	1	SS+CT/ 6 points
Theme 6. Application of statistical methods in economic analysis.	12			2	10		CT/ 8 points
Total for module 2	34 hours	8 hours	2 hours	6 hours	16 hours	2 hours	20 points
Module test №2							MT/ 30 points
Total for semester: hours / points	72 hours	18 hours	10 hours	8 hours	32 hours	4 hours	40 points
Module tests							60 points
Form of control	exam						100 points
Total:	210 hours	54 hours	26 hours	26 hours	92 hours	12 hours	

The policy of the course

Course is required for the students of specialty 292 – International Economical Relations. The student is obliged to fully master the knowledge, skills, practical skills and competencies of this discipline.

Evaluation policy

Assessment of academic achievement in the course «*Mathematics and Statistics for Economists*» is carried out on a 100-point scale in each semester. The assessment includes current control and final module control. The maximum number of points that a student can score during the current assessment for the semester is 40 points (self study (SS) and calculation tasks (CT)). The final module control for the semester includes grades for all modular tests (MT). points that a student can receive during the modular control for the semester is 60 points.

If the results of the semester have accumulated at least 75 points and the student agrees with this result, the grade for the semester can be set without passing the exam. Otherwise, the student takes the exam. The maximum number of points that can be obtained in the exam is 60 points. They replace the modular semester control scores, while the current semester control is maintained. The exam lasts 120 minutes. in writing. Each exam ticket contains two theoretical questions, as well as a set of tasks selected from each topic (1-2 tasks), a total of 10 tasks. exam. The test is similar.

Teacher's policy towards the student

All participants in the educational process must comply with the requirements of current legislation of Ukraine, the Statute and Rules of Procedure of Lesya Ukrainka University, generally accepted moral principles, rules of conduct and corporate culture; maintain an atmosphere of friendliness, responsibility, decency and tolerance. The atmosphere in the classroom should be creative, open to constructive criticism. Inadmissible delays for classes; use of a mobile phone, tablet or other mobile devices during the lesson; write-off. Attendance at lectures, practical classes, consultations are mandatory.

Academic Integrity Policy

During training, participants in the educational process are obliged to adhere to academic integrity: ethical principles and statutory rules that should guide participants in the educational process during training, teaching and research.

Observance of academic integrity by applicants provides: independent performance of educational tasks, tasks of current and final control (for persons with special educational needs this requirement is applied taking into account their individual needs and opportunities); references to sources of information in the case of the use of ideas, statements, information; compliance with copyright law; providing reliable information about the results of their own educational (scientific, creative) activities.

When assessing learning outcomes, students do not use prohibited means (mobile phone, tablet, synopsis, textbooks, other sources of information, including Internet resources), independently perform the proposed tasks.

Deadline and recompilation policy

If the applicant was absent from classes for any reason, he / she studies the theoretical material independently using textbooks, lecture notes, perform all tasks for classroom classes, all homework. It is possible to report on the performance of tasks during consultations, at the same time to find out unclear points, to ask questions to the teacher. Rearrangement of modular control works is forbidden. Works that are submitted in violation of deadlines without good reason are evaluated at a lower grade.

Recommended Books

1. Myroniuk L. Mathematics for economists and economic modeling: elements of linear and vector algebra: guidelines for solving the individual tasks for the students of Faculty of International Relations. Lutsk, 2020. 57 p.
2. Myroniuk L. Mathematics for economists and economic modeling: elements for analytic geometry: guidelines for solving the individual tasks for the students of Faculty of International Relations. Lutsk, 2021. 38 p.
3. Myroniuk L., Royko L. Mathematics for economists and economic modelling: Elements of Probability Theory and Mathematical Statistics: guidelines for solving the individual tasks for the students of Faculty of International Relations. Lutsk, 2021. 30 p.
4. Myroniuk L., Royko L. Mathematics and statistics for economists: guidelines for self-work of the students of Faculty of International Relations. Lutsk, 2021. 40 p


Electronic resources

1. UN Statistical Committee. [Electronic resource]. – Access mode: <http://unstats.un.org/>
2. International Institute of Statistics. [Electronic resource]. – Access mode: <http://isi.cbs.nl/>.

**Approved by the meeting
of the Department of General Mathematics and Methods of Teaching Informatics**

protocol № 2, 14 of September 2021 .

Head of the Department:



Khomyak M.