Simon Kuznets Kharkiv National University of Economics

Syllabus of the educational discipline «Higher and Applied Mathematics»

Specialty	*242 Tourism*
Educational program	*6.06.241.010 Tourism*
Level of education	*First (bachelor)*
Discipline status	*Base*
Teaching language	*English*
Course / semester	*1 course, first and second semesters*
Number of credits ECTS	*9*
Distribution by types of trainings and hours of study	*Lectures – 24 hours (12- first semester; 12--second semester)*
	Practical studies (seminars) – 12 hours.(6-first semester; 6-second semester)
	Laboratory studies – 12 hours (6-first semester; 6-second semester)
	Independent training –174 hours.(72-first semester; 102-second semester)
Form of final assessment	*Exam*
Department	*Department of Higher Mathematics and Economics and Mathematical Methods, S. Kuznets Kharkov National University of Economics, main building, rooms 329,330. Phone +38(057)702-04-05 (additional 3-33),*http://www.vm.hneu.edu.ua/
Teacher (-s)	*Silichova Tetiana Vasilivna, docent of department, PhD in Pedagogical Science*
Teacher's contacts	*tas.20.05.72@gmail.com*
Days of the classes	*Tuesday, Friday*
Consultations	*According to the consultations schedule.*

The purpose of the discipline is

Forming future specialists' basic mathematical knowledge for solving theoretical and practical problems in professional activity of competent specialist in a service sphere, skills of analytical thinking and skills of using mathematical knowledge for formation of real processes and developments, and for solving economic problems.

Prerequisites for learning

High School Mathematics Course

Content of the educational discipline

Content module 1 *Higher Mathematics*

Theme 1. *The elements of the theory of matrices and determinants*
Theme 2. *The general theory of the system of linear algebraic equations*
Theme 3. *The elements of vector algebra*
Theme 4. *The elements of analytical geometry*
Theme 5. *The limit of a function*
Theme 6. *Differential calculus of the function of one variable*
Theme 7. *An Investigation of Function and graphing it*
Theme 8. *Analysis of the function of several variables*
Theme 9. *The indefinite integral*
Theme 10. *The definite integral and its application*
Theme 11. *Differential equations*
Theme 12. *Series*

Content module 2 ***Probability theory and Mathematical statistics***

Theme 13. *Empirical and logical bases of probability theory. Elements of Combinatorics*
Theme 14. *Conditional probability, dependent and independent events. A complete group of events. Bayes formula*
Theme 15. *Bernoulli's formula, theorems of Moivre-Laplace, Poisson's theorem*
Theme 16. *Discrete random variables, distribution law, main characteristics*
Theme 17. *Uniform, normal and exponential distribution laws*
Theme 18. *Basic statistical estimations and their properties*
Theme 19. *Methods of checking statistical hypothesis*

Content module 3 ***Mathematical Programming and operations Research***

Theme 20. *The subject of mathematical programming. Geometric illustration of problem*
Theme 21. *General formulation of the linear programming problem. Simplex Method***.**
Theme 22. *Dual problem*
Theme 23. *Transportation Problem. Ways of solutions***.**
Theme 24. *A subject and tasks of operation research. Recourse management tasks*
Theme 25. *Task and replacement model. Conflicts situations. Way of solutions.*

Material and technical support (software) of the discipline

MatLab (Octave), Excel

Course page on the Moodle platform (personal training system)	*Work program of the discipline, work plan (technological card), hyperlinks to electronic publications of the discipline, recommended literature, students' attendance, lecture materials, questions for self-examination, methodical materials for seminars and laboratory works, test task for checking students' knowledge, example of examination paper and criteria* **https://pns.hneu.edu.ua/course/view.php?id=1017.**

Recommended literature

1. *Вища математика: математичний аналіз, лінійна алгебра, аналітична геометрія : підручник / [авт. кол. : Пономаренко В. С., Малярець Л. М., Афанасьєва Л. М. та ін. ; за ред. В. С. Пономаренка]. – Мультимедійне інтерактивне електрон. вид. комбінованого використ. (412 Мб). – Харків: ХНЕУ ім. С. Кузнеця, 2015.* http://library.hneu.edu.ua/jornal_aut1.php

2. *Методичні рекомендації до самостійної роботи з навчальної дисципліни "Вища та прикладна математика" розділ "Вища математика" для студентів напряму підготовки 6.030601 "Менеджмент" спеціалізації "Бізнес-адміністрування" денної форми навчання / Е. Ю. Железнякова, Т. В. Сілічова. – Харків : Вид. ХНЕУ ім. С. Кузнеця, 2014. – 102 с.*

3. *Методичні рекомендації до практичних завдань з розділу "Вища математика" для студентів спеціальності 242 "Туризм" першого (бакалаврського) рівня [Електронний ресурс] / укл. Е.Ю. Железнякова, Т.В. Сілічова; Харківський національний економічний університет ім. С. Кузнеця. - Електрон. текстові дан. (5,19 МБ). - Х. : ХНЕУ ім. С. Кузнеця, 2019. - 99 с. Режим доступу* http://repository.hneu.edu.ua/handle/123456789/21049

4. Guidelines for practical tasks in analytic geometry of the academic discipline "Higher and Applied Mathematics" for foreign and English-learning full-time students of the preparatory direction "Management" / compiled by Ie. Iu. Misiura. – Kh. : Publishing House of KhNUE, 2011. – 76 p. (English, Ukrainian)

5. Methodical recommendations for the conduct of the practical studies in the academic discipline "Higher mathematics" for foreign and English-learning students of the preparatory direction "Management" of the full-time education / complied by Ie. Iu. Misiura. – Kh. : Publishing House of KhNUE, 2010. – 44 p. (English, Ukrainian)

Assessment system of learning outcomes

Current control carried out during semester (during lectures, seminars and laboratory works) and evaluated by the amount of points (max-100 points). A minimum amount, that allows a

student to get credit is 60 in the first semester (max is 100 points). A minimum amount is 35 points in the second semester (max - 60 points) that allows a student to take an exam. Final (semester) control is carried out in the form of credit(first semester) and in the form of exam (second semester) and evaluated in points (max-40 points, min -25 points)

More detailed information on assessment is given in the technological card of the discipline.

Accumulation of rating points in the discipline

Types of training	**Maxpoints** *(1 semester)*	**Maxpoints** *(2 semester)*
Homework	12	5
Laboratory works	20	11
Essay	12	6
Control works	33	18
Colloquiums	26	20
Exam (if available)		40
Max points	100	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		
64 – 73	D	satisfactory	
60 – 63	E		
35 – 59	FX	unsatisfactory	not pass
1 – 34	F		

Discipline policies

Policy of academic integrity according to the Law of Ukraine " About Education" tells that teaching discipline should be based on the principles of academic integrity, they are a set of ethical principles and statutory rules that should guide participants in the educational process during training, teaching, conducting scientific (creative) activities to ensure confidence in learning outcomes and 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: reassessment (test, exam, etc.); re-passing of the relevant educational component of the educational program. Rewriting during control is prohibited (including with using electronic devises) 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 " Higher and applied Mathematics". https://pns.hneu.edu.ua/course/view.php?id=1017

Syllabus approved at the meeting of the Department «*Higher Mathematics and Economics and Mathematical Methods*». Protocol № 1…from 20.09.2020