MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SIMON KUZNETSKHARKIV NATIONAL UNIVERSITY OF ECONOMICS

"APPROVED"
Depute Head
(Director for scientific and pedagogical work)

M. V. Afanasiev

METHODS AND MODELS OF FORECASTING PROCESSES IN FOREIGN ECONOMIC ACTIVITY
syllabus for students

Area of Education **all**
Specialty **all**
Educational level **second (master's)**
Educational program **all**

Type of discipline **selective**
Language of teaching, training and evaluation **foreign (English)**

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APPROVED
at a meeting of the Department of Economic Theory, Statistics and Forecasting
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**Letter of renewal and re-approval
of the academic discipline**

Academic year	Date of the meeting of the department - developer of syllabus	Protocol number	The signature of the head of the department

1. Introduction

Annotation of the discipline:

The development of economic ties between countries, the rapid growth of the scale of the globalization process, increase the level of competition in the global market requires businesses to the permanent implementation of measures for the development of their foreign economic activities (FEA). The process of planning of activity of the enterprise limited, and is complicated by a number of objective and subjective reasons. First, the enterprise does not have full data about its current and future status and is unable to predict all changes that may occur in the operational environment. Even a modern enterprise with powerful information systems and have access to valuable sources of information are not able to completely eliminate uncertainty, and respectively, to plan their activities. Since uncertainty is an impossible, task due to the inability to exclude the influence of external factors, diversity nespithe interests and actions. The uncertainty is characterized by ambiguity used of opinions and expert evaluations, incompleteness and inaccuracy of data on the main parameters and conditions of object of forecasting. The biggest difficulty of forecasting foreign economic activity of enterprises and firms due to highly dynamic, multifactorial nature of its formation and difficult predictability of foreign economic relations. Efficiency and the probability of a successful implementation of foreign economic activities depends on many factors. Therefore, there is a need of forecasting and planning the implementation of FEA using methods economic and mathematical modeling. One of the most pressing challenges facing the leading companies engaged in foreign trade identification of promising strategies and tactics of enterprise in modern software products and online technology to improve the quality of management decisions. Simulation – the basic specific method that is used for analysis, determining trends of development of economic entities. This is especially important for those businesses and organizations engaged in foreign trade. The strategy and tactics of behavior in the markets of foreign countries is difficult structured problem that requires from managers the timely knowledge of development trends in the analyzed processes and forecasting the main indicators of their activities in foreign markets. The discipline "Methods and models of forecasting processes in foreign economic activity" will allow to effectively use the modeling methods of foreign economic processes, to build economic and mathematical model of economic processes, determine future consequences of foreign economic activity on the basis of the prediction of appropriate indicators, to implement the visualization of results of calculations using modern software and technology.

The object of the discipline is economic system, which carries out foreign trade activity and processes that reflect the main spheres of its activity.

The subject of discipline are methods and forecasting models of foreign economic processes and behavior of socio-economic systems.

The purpose of the discipline the acquisition of future specialists in the sphere of international activities of the competences regarding the construction and use of econometric models for evaluation, analysis and forecasting of complex socio-economic systems operating in conditions of high level of uncertainty and risk in both national and global market economy.

Course	1M	
Semester	2	
Number of ECTS credits	5	
Audit lessons	lectures	20
	laboratory	20
Independent work		110

Form of final control	test

Structural-logical scheme of studying the discipline:

Previous disciplines	The following disciplines
Higher mathematics	All disciplines of professional and practical cycle
Statistics	
Computer Science	
Economic theory	
Microeconomics	
Macroeconomics	

2. Competence and outcomes of studying in a discipline:

Competence	Results of studying
The ability to form an adequate system of statistical indicators as indicative space research.	To carry out an initial analysis of the information space research
	The ability to identify and handle anomalous values of methods and prediction models
	The ability to identify and handle anomalous values of methods and prediction models
The ability to develop an econometric model according to the real situation and analyze the adequacy of the models.	Implement adequate methods of evaluation of the economic situation, to carry out calculations of the parameters of the models and to check for compliance with the real processes in foreign economic activity
	Use appropriate criteria to evaluate the reliability of actual and predicted ratings
	The ability to choose adequate methods and models for forecasting in foreign trade activities
The ability to form management decisions about the conduct of an enterprise in international markets.	Understanding of the nature of tasks using the methods and models of forecasting
	Ability to modeling and forecasting of the relationships between processes and phenomena in the external economic activities of business entities
	The ability to rational use of the obtained prediction results in the formation of effective managerial decisions on adjustment of export-oriented enterprise behavior
The ability to use modern media & information technologies of processing and visualization of	Ability to use Excel, Statistics for processing large amounts of information regarding export-import activities of enterprises

large amounts of economic data.	The ability to use modern packages of information visualization.

3. Program of the academic discipline

Content module 1. The foundations of economic forecasting of systems behavior

Theme 1. Introduction to economic forecasting
1.1. Forecasting as a means of prediction of socio-economic processes
1.2. The system of economic forecasting and its elements
1.3. The principles and functions of economic forecasting
1.4. Classification of methods of economic forecasting
Laboratory work on theme 1. "The formation of information space research"

Theme 2. The series as a means of determining the trends of development of economic processes
2.1. The concept of a number of speakers, items. Comparing levels of a number of speakers
2.2. Requirements for statistical information. Pre-processing of empirical data
2.3. Average values of the levels of a number of speakers and their numerical characteristics
2.4. Analytical model of time series
Laboratory work on theme 2. "Investigation of regularities of development of foreign economic activity at the expense of statistical indicators."

Theme 3. The application features a simple forecasting methods
3.1. The notion of approximation. Simple methods of forecasting.
3.2. Method two extreme points. Method, medium group of points. Forecasting based on growth rate
Laboratory work on theme 3. "Simple methods of forecasting trends in the development of enterprises and events".

Content module 2. Methods of forecasting of economic processes

Theme 4. Forecasting foreign economic processes based on the use of econometric models
4.1. The concept of the regression equation. The major limitations of regression models
4.2. Building a univariate regression model. Assessment of statistical significance of parameters and model adequacy
4.3. The construction of multivariate forecasting models.
Laboratory work on t*heme*4. "Building bigtoponline univariate and regression models"

Theme 5. The use of specific forecasting models flow of foreign economic processes
5.1. The study of the seasonal components of the economic process using decomposition of time series
5.2. Building prediction models using qualitative variables
Laboratory work on theme 5. "Prediction of phenomena and processes taking into account quantitative and qualitative characteristics"

Theme 6. Adaptive forecasting methods
6.1. Features short-term forecasting techniques
6.2. Algorithmic methods of time series smoothing.
6.3. Forecasting using moving averages. Method Brown. Holt's Method
Laboratory work on theme 6. "Building short-term forecasting techniques"

Theme 7. Modeling and forecasting multivariate processes
7.1. The essence of cluster analysis.
7.2. Standardization and regulation. The concept of distance.
7.3. The use of methods of cluster analysis for spatial research in the foreign economic activities of enterprises
Laboratory work on theme 7. "The use of cluster analysis for the study of spatial economic processes."

4. The order of assessment of the results of training

The system of evaluation of the developed competencies of students takes into account the types of occupations that, according to the curriculum program, include lectures, laboratory classes, and independent work.

Assessment of the developed competencies among students is based on a 100-point accumulation system.

In accordance with the Provisional Regulations "On the Procedure for Assessing the Results of Students' Learning Based on the Accumulated Bulletin-Rating System" S. Kuznets KhNUE, control measures include current and final control.

Current control, carried out during the semester during lectures and laboratory classes, and estimated by the sum of the points scored (maximum amount - 100 points).

Current control of this discipline is carried out
in the following forms:
active work at lecture classes;
protection of laboratory works;
protection of the seminar task with the presentation of the material;
ongoing testing;
conducting a modular written control work.

Assessment of student's knowledge during laboratory work and individual tasks is carried out according to the accumulation system according to the following criteria:
understanding, degree of assimilation of the theory and methodology of the problems under consideration;
the degree of assimilation of the actual material of the discipline;
acquaintance with the recommended literature, as well as contemporary literature on the issues under consideration;
the ability to combine theory with practice when reviewing production situations, solving tasks, performing calculations in the process of performing individual tasks and tasks submitted for consideration in an audience;
logic, structure, style of presentation of the material in the works and during the lectures in the audience, ability to substantiate their position, to generalize the information and to draw conclusions;
arithmetical correctness of the settlement task.

The maximum possible score for a specific task is placed on condition that the student's individual task or his oral answer corresponds to all the specified criteria. Absence of one or another component reduces the number of points. During the evaluation of tasks,

attention is also paid to the quality, independence and timeliness of delivery of the tasks performed to the teacher, according to the schedule of the educational process. If any of the requirements are not met, the points will be reduced.

Criteria for evaluating non-auditory independent work of students. The general criteria for evaluating non-auditing independent work of students are: the depth and strength of knowledge, the level of thinking, the ability to systematize knowledge on specific topics, to push the substantiated conclusions, possession of categorical apparatus, skills and techniques of performing practical tasks, the ability to find the necessary information, to carry out its systematization and processing, self-realization on classes.

Criteria for evaluating non-auditing independent work are: ability to conduct critical evaluation of problem issues; the ability to explain alternative views and the presence of their own point of view, position on a particular problem issue; the quality and accuracy of teaching reasoning; logic, structuring and substantiation of conclusions on a specific problem; independence of performance; literacy of presentation of the material; use of comparative methods, generalizations of concepts and phenomena; job registration.

Final / semester control, conducted in the form of a credit, according to the schedule of the educational process.

The student should be considered certified if the sum of the points earned on the results of the final / semester test of success is equal to or greater than 60. In case of receiving less than 60 points, the student must pass the examination after the end of the examination session in the deadline set by the dean of the faculty, but not later than two weeks after the beginning of the semester.

Distribution of points for a week

Themes of the content module			Lectures	Laboratory sessions	The written test	Essay	Homeworks	Control work
Content module 1. The foundations of economic forecasting of systems behavior		**Theme 1.** Introduction to economic forecasting	1 week	2					2
		Theme 2. The series as a means of determining the trends of development of economic processes	2 week	2	4	2			8
		Theme 3. The application features a simple forecasting methods	3 week	2	4	2			8
Content module 2. Methods of forecasting of economic processes		**Theme 4.** Forecasting foreign economic processes based on the use of econometric models	4 week	2	4	2	9		17
			5 week	2	4			10	16
		Theme 5. The use of specific forecasting models flow of foreign economic processes	6 week	2		2			4
		Theme 6. Adaptive forecasting methods	7 week	2	4	2			8
			8 week	2	4				6
		Theme 7. Modeling and	9 week	2		2	9		13

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	forecasting multivariate processes	10 week	2	4	2		10	18
	Total		20	28	14	18	20	100

5. Grading scale: national and ECTS

Assessment of the S. Kuznets KhNUE according to Economics scale	ECTS assessing scale		Assessment according to national scale
90-100	A	excellent performance	Excellent
82-89	B	above average	
74-81	C	work at all correct, but with a number of errors from	Good
64-73	D	not bad, but many drawbacks	Satisfactory
60-63	E	performance meets the minimum criteria	
35-59	FX	need to re-take	Unsatisfactory
1-34	F	repeat the discipline	

6. REFERENCES

6.1. Main

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