MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

"APPROVED"
Deputy Head
(vice-rector for scientific and pedagogical work)

M. V. Afanasiev

MODERN METHODS OF BUSINESS ANALYTICS
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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statistics and forecasting   O. Rayevnyeva

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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:

Today, when making any business decisions, the role of intuition diminishes and the importance of business analytics is growing, whose effective functioning contributes to the implementation of the company's strategy. This leads to the search for effective forms of interaction between business strategies and business analytics at enterprises, which enables them to use data for successful development, transform them into useful information, form new knowledge about the peculiarities of business processes and the business environment on the basis of information technologies. Modern business analytics tools are quite diverse and flexible, and their choice is determined by the company's strategy, which changes the use of data from the enterprise by data management, which they receive from analysts. Increasingly, the introduction of business intelligence systems at the enterprise becomes a decisive factor in its existence on the market, and for client-oriented enterprises, they are simply necessary.

The rapid growth of the amount of available information used in the decision-making process, the increased need for operational access to it, the expansion of the number of data sources, and the need to provide access to them by operational staff have become the main reasons for a sharp increase in interest in business intelligence.

An acceptable level for an enterprise should be chosen on the basis of analysis of the strategic perspective of enterprise development. After all, in some types of economic activity, business analytics is not a prerequisite for success, while in others it is a major competitive advantage. In any case, successful business analytics processes should have a well-defined structure that always begins with defining an information strategy that is derived from the goals of the enterprise strategy and is geared towards generating forward-looking information as the main source of analytical competition.

The educational discipline "Modern methods of business analytics" will allow to effectively using modern information and economic methods and models of business process research, to determine the perspective directions of their development based on the forecasting of the relevant indicators, to visualize the results of calculations, using modern software products and online technologies.

The subject of the discipline is the subject of business, which carries out business processes in the current operating conditions.

The subject of the discipline is modern methods, models and information technologies for the study of business processes and behavior of socio-economic systems.

The purpose of the discipline: the acquisition by future specialists in the economic and analytical sphere of competence in the construction of economic models and the use of modern information technology to evaluate, analyze and predict the business processes of socio-economic systems, which operate in a high level of uncertainty and risk both national and world 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
Statistics	All disciplines of professional and practical cycle
Computer Science	
Political Economy	
Higher mathematics	
Microeconomics	Writing course papers, consulting projects
Macroeconomics	

2. Competence and outcomes of studying in a discipline:

Competence	Results of studying
Ability to acquire theoretical knowledge in conducting business process analysis based on the use of modern software packages and gaining the skills of forming an informational study area for making managerial decisions.	Conduct a preliminary analysis of the business environment in order to form the information space of the study
	Ability to evaluate the business environment with modern analysis tools and information technologies
	Use international indexes when analyzing and evaluating business processes
Ability to model business processes and develop managerial decisions according to the real situation	Apply methods of forecasting business processes, perform calculations of model parameters and verify compliance with real processes in the business environment based on the use of information technology
	Use panel data to analyze the business environment in the current management environment
	Ability to detect structural changes in economic processes
Ability to formulate managerial decisions about the behavior of the enterprise based on the use of cloud technologies	Understanding the essence of solvable business tasks by means of cloud technologies
	Ability to create scenarios for using cloud solutions when modeling the behavior of business processes
	Ability to visualize the resulting business results in the formation of effective management decisions to correct the behavior scenario of the enterprise
Ability to use modern information technologies and modern methods of analytics of business processes and their intellectual visualization.	Ability to use econometric forecasting methods, international indexes, cloud analysis for business environment assessment and analysis
	Ability to use intellectual rendering of business decisions.

3. Program of the academic discipline

Content module 1. Basics of business analysis

Theme 1. Methodological basis of business process analysis

1.1. The essence of the business process. Functions and tasks of business process analysis.

Approaches to defining the concept of business process. Essence, content of business processes of business entities in the current environment of changing environment.

1.2. Classification of types of analysis of business processes.

Structural diagram of business processes. Use of methods, models and technologies for analyzing business processes in accordance with the stated purpose. Classification of business processes for ENAPS. Classification of business processes by features and types of processes. Classification of business processes at the enterprise by appointment.

1.3. Toolkit for business process research.

Types of analysis of business processes on the basis of classification. Structural-hierarchical model of business process analysis in modern economic conditions.

Laboratory work on the theme 1. Formation of the information space of the study

Theme 2. Assessment of the business environment on the basis of international indexes

2.1. The essence of the assessment and analysis of the macro business environment

Purpose, content and methodical features of external business environment analysis. Determination of the main indicators of the macro environment. Determination of the factors of influence on the assessment of the macro business environment.

2.2. International indices as a modern means of analyzing the attractiveness of international business.

Concept index, index method. Elements of which the index is composed. Classification of types of index. The essence of international indices. Grouping of international indexes by classification. International ratings when assessing the financial situation of the business environment.

Laboratory work on the theme 2. "International indicators of business environment analysis"

Content module 2. Methods of estimation and forecasting of modern business processes

Theme 3. Forecasting trends of business environment development

3.1. Simple forecasting methods

Forecasting as a method of predicting socio-economic processes (approaches to solving predictive problems, ways of forecasting development, forms of prediction, prediction functions). Prediction as a management function. Classification of forecasts. Typology of forecasting methods. Stages of statistical forecasting process.

3.2. Features of the use of econometric forecasting methods

Basic stages of building econometric prediction models. Classification of economic and mathematical models of forecasting on various grounds. Basis requirements for the

construction of economic and mathematical models of forecasting.

3.3. Methods of adaptive forecasting.

The concept of anti-aliasing. Common smoothing methods: simple smoothing methods, exponential smoothing, adaptive smoothing. Concept of adaptive smoothing models. Smoothing by Brown, Holt and Winters.

Laboratory work on the theme 3. "Simulation of business processes in modern conditions of management".

Theme 4. Investigation of spatial-temporal aggregates

4.1. Panel data

The concept of panel data and their application in the economy. Types of panel data: balanced and unbalanced panels. Simple panel data model, combined regression model. Models of complex errors. Individual and fixed effects. Advantages and disadvantages of using panel data.

4.2. Formation of homogeneous aggregates by means of cluster analysis.

Areas of use of cluster analysis. Classification and its types. Comparison of clustering and classification. Stages of cluster analysis. Advantages and limitations of cluster analysis. The concept of the cluster method. Methods of cluster analysis - hierarchical and non-hierarchical methods of cauterization. Hierarchically sgm. and divisimic methods. Rules for merging into a cluster. Medium method, PAM method. Checking the quality of clustering.

4.3. Methods of Detecting Structural Changes in Economic Processes

The essence of structural changes in the study of economic processes. Classification of methods in the study of the structure of business processes. Stages of the use of structural analysis in the study of business processes

Laboratory work on the theme 4. "Formation of homogeneous sets of business processes"

Theme 5. Cloud service tools for business analysis

5.1. Essence of cloud analysis of business processes

Functions, tasks of cloud analysis. Stages of cloud analysis of business processes. Prospects of using cloud technologies in business process analysis Cloud solutions: opportunities, benefits, risks.

5.2. Scripts for using cloud solutions. Intellectual visualization of business decisions.

Cloud for Business: A Review of Effective Uses. Economic efficiency of the cloud-computing model. The essence of using intellectual imaging when making business decisions.

Laboratory work on the theme 5. "Business analysis by means of cloud technologies"

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	Total
Content module 1. Basics of business analysis	**Theme 1.** Methodological basis of business process analysis	1 week	-	-	-	-	-	-	-
		2 week	1	-	-	-	-	-	1
		3 week	-	5	1	-	-	-	6
	Theme 2. Assessment of the business environment on the basis of international indexes	4 week	1	-	-	-	4	-	5
		5 week	-	-	-	3	-	-	3
		6 week	1	5	1	-	-	-	7
Content module 2. Methods of estimation and forecasting of modern business processes	**Theme 3.** Forecasting trends of business environment development	7 week	-	-	-	-	4	-	4
		8 week	1	-	-	-	-	-	1
		9 week	1	5	1	-	-	15	22
	Theme 4. Investigation of spatial-temporal aggregates	10 week	1	-	-	-	4	-	5
		11 week	-	5	-	3	-	-	8
		12 week	1	-	-	-	-	-	1
		13 week	-	-	-	-	-	-	-
		14 week	1	5	1	-	-	-	7
	Theme 5. Cloud service tools for business analysis	15 week	-	-	-	3	-	-	3
		16 week	1	5	-	-	4		10
		17 week	1	-	1	-	-	15	17
Total			10	30	5	9	16	30	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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6.2. Additional

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