MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

"APROVED"
Deputy head
(vice-rector for scientific and pedagogical work)
Mykola AFANASIEV

Data and decision making

syllabus of the descipline

Field of knowledge	***12 Information Technology***
Specialty	***122 Computer Science***
Educational level	***Second (master's)***
Educational program	***Computer Science s***

Discipline status	***selective***
Language of instruction, teaching and assessment	***English***

Head of department
statistics and economic forecasting
Olena RAYEVNYEVA

Kharkiv
2020

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ СЕМЕНА КУЗНЕЦЯ

Данні та прийняття рішень

робоча програма навчальної дисципліни

Галузь знань ***12 Інформаційні технології***
Спеціальність ***122 Комп'ютерні науки***
Освітній рівень ***Другий (магістерський)***
Освітня програма ***Комп'ютерні науки***

Статус дисципліни ***вибіркова***
Мова викладання, навчання та оцінювання ***англійська***

Харків
2020

The syllabus has been approved by the Department of Statistics and Economic Forecasting
Protocol № 1 on 19.08.2020.

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Letter of renewal and re-approval of the syllabus of the academic discipline

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

Abstract of the discipline

The working program of the discipline "Data and Decision Making" is compiled in accordance with the educational and scientific training program for masters in the specialty 122 - Computer Science.

Much of management is decision making. It is inherent in almost everything that managers do. Managers receive information through information systems, oral communication and possibly in other ways. The classic list of management tasks includes planning, organization, delegation or management, coordination or control, reporting and budgeting. Some of these tasks are a direct adjunct to decision-making, for example, planning, delegation or leadership. Other tasks usually lead to solutions. For example, the organization of work in organizational departments and offices requires an analysis of the current work situation, and the next step may be to decide to change these processes. In the same way, hiring new employees and appointing employees to jobs (personnel tasks) also ends with the decision of management. The solution is a choice. The decision maker must have two or more options available and then choose one of the most effective. Thus, decision-making is one of the most important tasks of management, which uses the concepts and methods of mathematics, statistics, economics, management and psychology, and which studies the patterns of people's choice of solutions to various problems, as well as explores ways to find the most profitable possible solutions.

The discipline "Data and Decision Making" is a selective discipline and is studied in accordance with the curriculum for the training of masters of the educational program "Business Analytics and Information Systems in Entrepreneurship". The course is aimed at using modern methods to support economic decision-making and develop the ability to use the presented methods, be able to clearly present their own results based on the justification of the problem-solving process, acquire the ability to rationally choose a method of justification for a specific problem decision support; apply basic concepts in economics, decision theory and systems analysis, data analysis and fuzzy multiple analysis.

The object of the discipline is the discipline are data, processes and systems.

The subject of the discipline is theoretical and practical issues concerning the use of methods of substantiation of decisions in various areas of activity of the studied objects.

The purpose of the discipline: is to study modern methods of decision support, research of current problems in decision-making in the activities of enterprises and organizations, acquiring skills to apply these methods in practice to develop and justify complex economic decisions.

Characteristics of the discipline

Academic year	**1M**
Semester	**2**
Number of ECTS credits	**5**
Final assessment	**Pass**

Structural and logical scheme of studying the discipline

Prerequisites	Postrequisites
Basics of data analysis Business intelligence	Data visualization and visual analytics Statistical thinking for data science

Competences and learning outcomes of the study

Competences	Learning outcomes
Ability to use different methods of generating ideas and evaluating alternative solutions	Justify the choice of heuristic and economic-mathematical models in the study of problem situations.
Ability to use modern information tools in decision-making and problem analysis	Apply computer technology and modern software to solve problems of management decisions in socio-economic activities

Ability to identify the needs of stakeholders and develop tactics to influence them	To choose effective methods of search, acceptance and substantiation of administrative decisions in economic activity, forecasting of their consequences and estimation of efficiency.
Ability to develop a plan for the implementation of decisions and a system for evaluating the results	Select and apply adequate criteria for evaluating the quality and effectiveness of management projects.
Ability to identify and minimize risk in decision making and implementation of management decisions	Analyze problem situations, identify the main risks that affect the outcome of socio-cultural activities

The program of the discipline

Content module 1. Decision making methodology

Topic 1. The decision-making process, its principles and elements.

Topic 2. Methods and techniques for finding effective solutions.

Topic 3. Economic and mathematical methods of decision making

Content module 2. Practical aspects of decision making and their information support

Topic 4. Methods of evaluation of management decisions

Topic 5. Business decision support systems. Data Driven Decision Making.

Teaching and learning methods

Problem lectures, mini-lectures, banks of visual support and presentations. Lecture, practical, seminar, laboratory classes with the use of information technologies. Assessment methods: current control (computer testing, protection of laboratory works); modular control (modular control works); final control (pass).

The procedure for evaluating learning outcomes

The system of assessment of formed competencies in students takes into account the types of classes, which in accordance with the curriculum of the discipline include lectures, laboratory, seminar, practical classes, as well as independent work. Assessment of the formed competencies of students is carried out according to the accumulative 100-point system.

The procedure for conducting current assessment of students' knowledge. Assessment of student knowledge during seminars, practical and laboratory classes is carried out according to the following criteria:

The lecture is evaluated in 2 points, from them:

1 - attendance at lectures;

1 - active participation in the discussion, answers to the lecturer's questions.

Laboratory work is estimated at 10 points, of which:

2 points - correct answers on the topic of work;

2 points - knowledge of software and computers;

2 points - work with Internet resources and selection of statistical data;

2 points - the correctness of the calculations;

2 points - report and timely defense of work.

Tests are evaluated in 3 points of them:

50% correct answers - 1 point;

75% of correct answers - 2 points;

100% correct answers - 3 points.

The current test is estimated at 25 points, of which:

10 points - the theoretical part;

15 points - the practical part (10 points for the correctness and correctness of the problem, 5 - economic interpretation of the results).

Students' individual work consists of the time they spend searching, selecting and reviewing literature, preparing for laboratory classes. Points for these types of work are not accrued.

The final grade for the discipline is calculated taking into account the points obtained during the current control of the accumulative system. A student may not be admitted to the test if the number of points obtained as a result of the re-examination during the current control in accordance with the content module during the semester did not reach 60 points.

A **student should be considered** certified if the sum of points obtained from the results of the final / semester examination is equal to or exceeds 60. The final grade is set according to the scale given in the table "Grade scale: national and ECTS".

Forms of assessment and distribution of points are given in the table "Rating-plan of the discipline".

Rating scale national and ECTS

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

Accumulation of rating points in the discipline

Topic	Types of training		Forms of evaluation	Max points
Topic 1.	***Classroom work***			
	Lecture	The lecture reveals the following issues: 1. Decision-making, the importance and significance of management decisions, the principles of decision-making. Decision making algorithm. Rules of decision making. 2. The concept of the problem, its types, diagnosis and analysis. 3. Types of solutions. The decision-making process. Decision theory.	Attending lectures	4
	Laboratory session	Seminar on the topic 1. Psychological features of ATS in decision making. 2. Pareto principle, its essence. 3. Practical rules of decision making. 4. Case for business decision making	Active participation in the seminar task	5
			Test tasks	3
	Individual work			
	Questions and tasks for self-study	Search, selection and review of literary sources on a given topic. Preparation for laboratory classes		
op ic	***Classroom work***			

	Lecture	The lecture reveals the following issues: 1. Classification of methods and techniques for finding effective solutions. 2. Expert methods of decision making. Individual and collective elections. 3. SWOT, PEST, ABC analysis as a basis for management decisions	Attending lectures	4
	Laboratory session	Seminar on topic 2. 1. Methods and models used in weakly structured decisions. 2. Models of decision-making in conditions of uncertainty and multicriteria. 3. The method of analysis of the Saati hierarchy as a tool for decision making.	Active participation in the seminar task	5
			Test tasks	3
	Individual work			
	Questions and tasks for self-study	Search, selection and review of literary sources on a given topic. Preparation for laboratory classes		
Topic 3	***Classroom work***			
	Lecture	The lecture reveals the following issues: 1. The use of Markov processes for decision making 2. Game theory and decision making in conditions of uncertainty	Attending lectures	4
	Laboratory session	Laboratory lesson on the topic 3. Determining the future state of the enterprise under the conditions of high dynamism of economic processes: Markov chains and criteria of game theory.	Test tasks	3
			Protection of laboratory work	10
	Individual work			
	Questions and tasks for self-study	Search, selection and review of literary sources on a given topic. Preparation for laboratory classes		
Topic 4	***Classroom work***			
	Lecture	The lecture reveals the following questions: 1. Statistical theory of decision making. 2. Principles of evaluation of management decisions. Determining the economic efficiency of the solution. 3. Methods of evaluating financial decisions.	Attending lectures	4
	Laboratory session	Laboratory lesson on the topic 4. Tree of decisions, methods of assessing the feasibility of financial decisions as a tool for forming a rational decision	Protection of laboratory work	10
			Test tasks	3
	Individual work			

	Questions and tasks for self-study	Search, selection and review of literary sources on a given topic. Preparation for laboratory classes		
Topic 5	***Classroom work***			
	Lecture	The lecture reveals the following questions: 1. What is data-based decision making. The culture of using data in decision making. 2. Advantages of Data-Driven Company. 6 effective tips to simplify the decision-making process. 3. Decision support systems in business.	Attending lectures	4
	Laboratory session	Seminar on topic 5. Modern decision support systems, features of design and use	Protection of laboratory work	10
			Test tasks	3
			Written test	25
	Individual work			
	Questions and tasks for self-study	Search, selection and review of literary sources on a given topic. Preparation for laboratory classes		

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