

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

ЗАТВЕРДЖЕНО
на засіданні кафедри
менеджменту та бізнесу
Протокол № 1 від 25.08.2023 р.

ПОГОДЖЕНО
Проректор з навчально-методичної роботи



Каріна НЕМАШКАЛО

Технології прийняття рішень в бізнесі
робоча програма навчальної дисципліни (РПНД)

Галузь знань	07 Управління та адміністрування
Спеціальність	073 Менеджмент
Освітній рівень	перший (бакалаврський)
Освітня програма	Бізнес-адміністрування

Статус дисципліни	обов'язкова
Мова викладання, навчання та оцінювання	англійська

Розробники:

д.е.н., професор

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Харків
2023

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

APPROVED

at the meeting of the department
management and business
Protocol № 1 of 25.08.2023

AGREED

Vice-rector for educational and methodical
work



Technologies of decision making in business

Program of the course

Field of knowledge **07 Management and administration**
Specialty **073 Management**
Study cycle **first (bachelor)**
Study programme **Business Administration**

Course status **mandatory**
Language **English**

Developers:

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2023

INTRODUCTION

Decision making plays the central role in managing organizations. Managers are expected to make choices among alternatives that are often uncertain and to choose wisely in order to benefit both the organization and its key stakeholders. This requires the use of appropriate technologies enabling identification of the problem, data collection, development of alternative solutions, their evaluation and final choice of the best alternative. Such technologies cover 3 main areas: analytical (aimed on making optimal data-driven decision), psychological (understanding the behavioral patterns of decision makers, motivating managers for rational decision making, avoiding cognitive biases, etc.) and organizational (enabling group decision making).

The program of studying the course "Technologies of decision making in business" is compiled according to the educational program of bachelors preparation.

The purpose of the course "Technologies of decision making in business" is to form a system of theoretical knowledge and practical skills of using scientifically grounded technologies of managerial decision making.

The tasks of the course are:

disclosure of the categorical apparatus of technologies of decision making in business, its tasks at the enterprise;

mastering the principles and methods of decision making;

mastering the technologies of identification of the problem, data collection, development of alternative solutions, their evaluation and final decision making.

The object of the course is the process of managerial decision making in business. The subject of the course is a set of principles and technologies for managerial decision making in business.

Competences and learning outcomes formed by the course are given in table 1.

Table 1

Competences and learning outcomes formed by the course

Learning outcomes	Competencies
LO3	GC3
LO4	GC4, GC11, SC1, SC10, SC12
LO6	SC2, SC10, SC12
LO7	SC2
LO8	SC1, SC2, SC6, SC19
LO11	GC3
LO12	SC7, SC13
LO16	GC11
LO18	GC4, SC2
LO20	GC4, GC5
LO21	GC5, SC20

where LO3. Demonstrate knowledge of theories, methods and functions of management, modern concepts of leadership.

LO4. Demonstrate skills in identifying problems and justifying management decisions.

LO6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.

LO7. Demonstrate organizational design skills.

LO8. Implement management techniques to ensure the effectiveness of the organization.

LO11. Demonstrate skills in situation analysis and communication in various areas of the organization's activities.

LO12. Assess the legal, social and economic consequences of the organization's functioning.

LO16. Demonstrate the skills of independent work, flexible thinking, openness to new knowledge, being critical and self-critical.

LO18. Evaluate opportunities to use technology to optimize business efficiency.

LO20. Coordinate aspects of business organizations that contribute to the efficiency of its work.

LO21. Demonstrate communication, research, technological and cross-cultural skills necessary to analyze business situations, prepare, justify and present management decisions.

GC3. Ability to think abstractly, analyze, and synthesize.

GC4. Ability to apply knowledge in practical situations.

GC5. Knowledge and understanding of the subject area and understanding of professional activities.

GC11. Ability to adapt and act in a new situation.

SC1. Ability to identify and describe organizational characteristics.

SC2. Ability to analyze the results of the organization's activities, to compare them with the factors of influence of the external and internal environment.

SC6. Ability to act in a socially responsible and conscious manner.

SC7. Ability to select and use modern management tools.

SC10. Ability to evaluate the work performed, ensure its quality and motivate the organization's staff.

SC12. Ability to analyze and structure organizational problems, to form reasonable decisions.

SC13. Understand the principles of law and use them in professional activities.

SC19. Ability to create conditions at the enterprise that promote the emergence and promotion of innovations, understand existing and new technology and its impact on new/future markets.

SC20. Ability to develop effective procedures and communication mechanisms for interpersonal interaction in the business environment, including adaptation to new situations.

COURSE CONTENT

Content module 1. Basic principles and tools of decision making in business

Topic 1. Fundamentals of decision making and decision support systems in business

The essence of decision, decision making and managerial decision making. The role of decision making in management.

The quality of the managerial decision. Requirements to the high-quality managerial decisions. Components of managerial decision.

The process of decision making: problem (need) identifying, goal formulating, data collection, defining the decision criteria, development of alternatives, alternatives evaluation, choice of alternative, decision coordination, decision approval and legal registration, implementation of decision, and control. Key technologies for managerial decision making. Main participants of managerial decision making process. Psychological and ethical aspects of decision making.

Classification of managerial decisions depending on the scale of the object, nature of the goals and the content of decisions, scope of the problems, degree of certainty, degree of mandatory implementation, degree of independence, number of alternatives, number of decision-makers, etc.

Definition and overview of Decision Support Systems (DSS). Historical reference, prerequisites and reasons for the emergence of the DSS. The place of DSS among generations of information systems. Structure and functions of DSS. Classification of DSS according to the field of use. DSS for solving business management problems.

Topic 2. Effect of managerial decision

The essence of effect of managerial decision. Main concepts of business performance. Types of effect in business. Contradictions of effect in business.

Principles of evaluation of the effect of managerial decision. Technologies of evaluating the effect of managerial decision.

Topic 3. Project evaluation and review technique

Definition and overview of Project evaluation and review technique (PERT). Historical background and development of PERT.

Explanation of critical path method (CPM) and how it relates to PERT. Understanding the terms: activities, events, nodes, paths, and milestones. Work breakdown structure. PERT chart as a visual representation of the project's activities and their dependencies.

Breakdown of the three main components: optimistic time, pessimistic time, and most likely time. Calculation of expected time using the weighted average. Identification of the critical path and its significance in project scheduling. Understanding the concept of slack or float.

Practical application of PERT. Overview of software tools available for PERT analysis and project management. Advantages of using PERT. Consideration of limitations and potential drawbacks.

Topic 4. Decision making in conditions of risk and uncertainty

Definition and distinction between risk and uncertainty. Importance of understanding and managing risk and uncertainty in decision-making processes. Types of uncertainty, including ambiguity, variability, and unpredictability. Examples illustrating each type of uncertainty.

Risk assessment techniques. Importance of identifying and quantifying risks in decision making.

Decision trees as a tool for analyzing decisions under uncertainty. Decision tree components, including decision nodes, chance nodes, and branches. Expected Monetary Value (EMV). Calculation of EMV and its interpretation in decision making.

Sensitivity analysis as a method for evaluating the impact of uncertainty on decision outcomes. Techniques for conducting sensitivity analysis, including one-way and two-way sensitivity analysis. Overview of real options analysis as an approach to decision making in uncertain environments.

Decision making in conditions of war. Case studies of decision making in conditions of full-scale invasion of Russia to Ukraine.

Content module 2. Computer-aided decision support systems in business

Topic 5. Multicriteria decision making technologies

Models and methods of decision-making under conditions of multicriteria. Methods for solving multicriteria problems.

Multidimensional optimization. Formulation of multidimensional optimization problems. Methods of unconditional and conditional optimization. Objective function, system of constraints. Study of aggregations, their types, definitions, and mathematical operations with them. Deterministic linear programming problems.

Analytic Hierarchy Process method. Types of hierarchies. Mathematical formalization. Pairwise comparison scale by T. Saaty. Expert assessments of importance and priority. Application of the Analytic Hierarchy Process method to managerial decision making in business.

Topic 6. Experts decision making methods

The method of expert assessments as a method of informal decision-making analysis. Psycholinguistic features of obtaining information necessary for decision-making. Features of obtaining information from experts.

The concept of collective decision-making. Groups influencing the decision-making process. Voting rules. Quality of group decisions.

Features of expert decision-making technology. Methods of involving the group in decision-making. Discussion methods. Pareto set. Methods of processing expert assessments. Group dynamics and group distortions. Collective decision support systems.

Topic 7. Methods of the theory of statistical decisions in business

Definition and overview of statistical decision theory. Importance of statistical decision-making in business contexts.

Overview of utility theory. Explanation of utility functions and their interpretation in decision analysis. Priorities and their numerical expression. Situation of indifference. Situation of strict prioritization. Marginal utility.

Applications of Statistical Decision Theory in Business. Investment decision making. Marketing strategy. Operations management. Risk management. Software for statistical decision making in business.

The list of laboratory classes is given in the table 2.

Table 2

The list of laboratory studies

Topic and / or task	Content
Topic 1. Task 1	Laboratory study: developing the mind map and problem map
Topic 2. Tasks 2–6	Laboratory study: calculating effect of managerial decision
Topic 3. Task 7	Laboratory study: developing the PERT chart and calculating its characteristics
Topic 4. Task 8–9	Laboratory study: decision making in conditions of uncertainty and risk
Topic 5. Task 10	Laboratory study: multicriteria decision making with the use of Analytic Hierarchy Process
Topic 6. Task 11	Laboratory study: experts decision making
Topic 7. Task 12	Laboratory study: decision making with advanced statistical methods

The list of self-studies in the course is given in table 3.

Table 3

List of self-studies

Name of the topic and/or task	Content
Topic 1 – 7.	Study of lecture material, selection and review of literary sources and regulatory framework of Ukraine
Topic 1 – 7.	Preparation for laboratory classes
Topic 1 – 7.	Performance of educational and research tasks
Topic 1 – 7.	Preparation for written tests
Topic 1 – 7.	Preparation for the exam

The number of hours of lectures, laboratory studies and hours of self-study is given in the technological card of the course.

TEACHING METHODS

In the process of teaching the course, in order to acquire certain learning outcomes, to activate the educational process, it is envisaged to use such teaching methods as: lecture-discussion (topics 1, 4), small group work (topics 1, 6), case studies (topic 1, 2, 3, 5, 6), competence-oriented tasks (topics 1–7).

FORMS AND METHODS OF ASSESSMENT

The University uses a 100-point cumulative system for assessing the learning outcomes of students.

Current control is carried out during lectures and laboratory classes and is aimed at checking the level of readiness of the student to perform a specific job and is evaluated by the amount of points scored:

– for courses with a form of semester control as an exam: maximum amount is 60 points; minimum amount required is 35 points

The final control includes current control and an exam.

Semester control is carried out in the form of a semester exam.

The maximum amount for an exam is 40 points. The minimum amount required for passing an exam is 25 points.

The final grade in the course is determined:

– for disciplines with a form of exam, the final grade is the amount of all points received during the current control and the exam grade.

During the teaching of the course, the following control measures are used:

Current control: competence-oriented tasks on topics (maximum score – 15 points); written tests (maximum score – 15 points, 3 tests during the semester, total maximum number of points – 45 points).

Semester control: Grading including Exam (40 points).

More detailed information on the assessment system is provided in technological card of the course.

An example of an examination card and evaluation criteria for the course.

An example of an examination card

Simon Kuznets Kharkiv National University of Economics

First (bachelor's) level of higher education

Specialty “Management”

Study programme “Business Administration”.

Course “Technologies of decision making in business”

1. Task: answer the theoretical test questions by choosing the answer "true" or "false" (10 points):

1. Concepts used in mind map, can include the problem, its elements, causes and possible solutions
2. Mind map can include several levels of concepts around the central one
3. The “5 Why” technique is used to find the core cause of a particular problem
4. Economic effect of a managerial decision can only be calculated as increase in profit (net profit)
5. Economic effect of managerial decision cannot be negative
6. Decision making is only used to perform planning and controlling functions of management
7. When calculating economic effect of managerial decision, it is not mandatory to use quantitative data (indicators)
8. Correctly formulated goals must be time bounded
9. Making a rational decision, we must formulate goal before evaluating alternatives
10. Satisficing is one of characteristics of high quality managerial decision

Task 2. Solve the task and draw conclusions (15 points)

Calculate the economic effect of increase in sales

Indicator	Before increase in sales	After increase in sales
Unit sales, pcs	900	1100
Variable costs per unit, \$	12000	12000
Price, \$	18000	18000
Fixed costs, \$	6000000	8000000

Task 3. Solve the task and draw conclusions (15 points)

According to data below, develop a PERT chart and calculate time characteristics of its events. Define the critical path.

Work	Duration of work	Preceding work
A	4	-
B	1	A
C	7	B
D	12	C
E	10	C

Approved at the meeting of Management and Business Department,
Protocol № ___ of « ___ » _____ 20 ___ year.

Examiner

PhD, Associate Professor Andrii KOTLYK

Head of Department

Doctor of Economics, Professor Tatyana LEPEYKO

Assessment criteria

The final grade for the exam consists of the sum of the grades for the completion of all tasks, rounded to a whole number according to the rules of mathematics.

The algorithm for solving each task includes separate stages that differ in complexity, time-consumingness, and importance for solving the task. Therefore, individual tasks and stages of their solution are evaluated separately from each other as follows:

Task 1 (test) – 10 points:

for each correct answer – 1 point.

Tasks 2 and 3 (diagnostic) – 15 points (total – 30 points).

The maximum total number of points for the performed **diagnostic task** is 15 points, namely for

methodical correctness of the calculation of indicators that must be calculated according to the task – 7 points;

disclosure of the process of solving the task by providing formulas, explanations – 3 points;

arithmetic correctness of calculations – 2 points;

substantiated conclusions – 3 points.

RECOMMENDED REFERENCES

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