



Syllabus Course Program



Decision making in IT business

Specialty

073 – Management

Institute

Institute of Education and Science in Economics,
Management and International Business

Educational program

Management of Organizations and Administration

Department

Management (204)

Level of education

Bachelor's level

Course type

Elective

Semester

6

Language of instruction

English

Lecturers and course developers



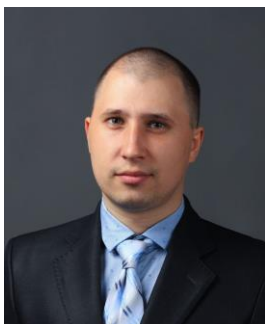
Olga Nashchekina

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PhD in Physics & Mathematics, Master's degree in Management, associate professor, associate professor of Management department

Authored and co-authored over 130 scientific publications. Teaches courses: «Organization theory», «Managerial decisions», «Marketing management», «Business ethics and social responsibility», «Basics of scientific research»

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Petro Foshchii

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Ph.D. (C.Sc.) in Economic Sciences, associate professor of Management department

Authored and co-authored over 30 scientific and methodological publications.

Courses: Econometrics, Electronic Business, Information Technology in Management, Decision-making in the IT business

[More about the lecturer on the department's website](#)

General information

Summary

The purpose of this course is to provide students with knowledge and develop their practical skills related to making and implementation of organizational decisions. The course introduces students to models and approaches to decision making, mathematical tools that can be applied in the process of formal assessment and selection of decision alternatives. The course addresses specific issues related to decision making in IT-business.

Course objectives and goals

- to familiarize students with qualitative and quantitative decision making tools;
- to help students develop the ability to assess the decision situation and choose appropriate approaches to decision making and implementation;
- to show the role of data analysis in decision making;
- to help students build on skills in using software for data analysis and project management;
- to familiarize students with the types of decisions in IT-sphere and approaches to making them

Format of classes

Lectures, workshops, course work, self-study. The course ends with a final exam.

Competencies

GC08. The ability to use information and communication technology.

GC11. The ability to adapt to a new situation and take an action.

GC12. The ability to generate new ideas (creativity).

SC03. The ability to identify prospects for organizational development.

SC08. The ability to plan the organization activity and to manage time.

SC09. The ability to work in a team and to establish interpersonal interaction when solving professional tasks.

SC10. The ability to assess the performed works, to ensure their quality and to motivate personnel of an organization.

SC12. The ability to analyze and structure the organizational problems, make informed and justified decisions.

SC16. The ability to identify and analyze organizational problems, make informed and well-grounded decisions regarding organizational activities, operational strategies and organizational behavior.

SC2.2. The ability to collect and process market information in the field of ICT sector

Learning outcomes

LO 04. To demonstrate the ability to identify problems and justify managerial decisions.

LO 06. To demonstrate the skills related to search, collection, and analysis of information, calculation of indicators for substantiation of managerial decisions.

LO 07. To demonstrate the skills of organizational planning.

LO 09. To demonstrate the skills of interaction, leadership, and teamwork.

LO 12. To evaluate the legal, social, and economic outcomes of an organization's functioning.

LO 16. To demonstrate skills of independent work, flexible thinking, openness to new knowledge, to be critical and self-critical.

PO2.2. To demonstrate skills of justification of management decisions using information technology and systems

Student workload

The total volume of the course is 150 hours (5 ECTS credits): lectures - 24 hours, workshops - 24 hours, self-study - 102 hours.

Course prerequisites

Higher mathematics, Economic informatics, Fundamentals of management

Features of the course, teaching and learning methods, and technologies

Interactive lectures with presentations, discussion-based learning, case studies, problem solving using Excel spreadsheet, student-peer feedback, group work, project-based learning (course work)

Program of the course

Topics of the lectures

Topic 1. Introduction to decision making

1. The role of decision making in management. 2. The concept of organizational (managerial) decision. 3. Types of organizational decisions. 4. The requirements to organizational decisions. 5. Decision effectiveness.

Topic 2. Methodological approaches to decision making. Decision-making models

1. Decision theory: conceptual approaches. 2. The rational decision making model. 3. The bounded rationality model and satisficing. 4. The political model. 5. The garbage can model. 6. The use of systems approach in decision making.

Topic 3. Decision making under certainty and under uncertainty conditions

1. Decision tables and complete enumeration. 2. Linear programming. 3. Sensitivity analysis. 4. Criteria of choice under uncertainty.

Topic 4. Decision making under risk conditions

1. Conditions of risk. 2. The use of payoff matrices. 3. Decision trees. 4. Utility functions and attitudes towards risk.

Topic 5. Multiple criteria decision making

1. Compensatory and non-compensatory models. 2. The analytic hierarchy process.

Topic 6. Individual and group decision making

1. Individual decision-making. 2. Group decision making: approaches and techniques. 3. Advantages and disadvantages of individual and group decision making. 4. Leadership styles and decision making.

Topic 7. Agile project management and its effect on decision making

1. Distributed decision making. 2. Decision making in agile project teams. 3. Scrum and kanban as agile project management methodologies.

Topic 8. Marketing decisions in IT-business

1. Value creation models in IT-sphere. 2. Cloud-service models in IT-sphere: SaaS, PaaS, IaaS. 3. Marketing SaaS: key decisions and key metrics. 4. Marketing communication strategies.

Topic 9. Cost optimization decisions

1. Infrastructure cost optimization decisions. 2. Cloud vs on premise vs hybrid solutions. 3. Cloud cost optimizations decisions. 4. Decisions on IT outsourcing.

Topic 10. Cybersecurity, artificial intelligence, and the web accessibility

1. Data protection and cybersecurity. 2. The benefits and applications of artificial intelligence (AI). 3. Generative AI: new possibilities and challenges. 4. Web accessibility in modern world: social responsibility and economic benefits.

Topic 11. The role of data analysis in decision making in IT-business

1. Data-driven decisions. 2. Sources of data. 3. Tools for data analysis.

Topic 12. Decision implementation

1. Mechanisms for implementing decisions. 2. Boosting employee motivation and engagement.
3 Evaluating the decision outcomes

Topics of the workshops

Topic 1. Decomposing a complex decision into a number (hierarchy) of sub-decisions.

Topic 2. Decision making models. Ethical decision making

Topic 3. Applying linear programming for making a decision on resource allocation. Practicing the use of different criteria for decision making under uncertainty

Topic 4. Practicing the use of payoff matrices and decision trees for decision making under risk conditions.

Topic 5. Practicing the use of compensatory and non-compensatory models in decision making. Analytic hierarchy process.

Topic 6. Choice of the decision making method and leadership style for a given decision situation.

Topic 7. Agile decision-making in project management.

Topic 8. Marketing SaaS: key decisions and KPIs.

Topic 9. Cost optimization decisions in IT-sphere.

Topic 10. The benefits and risks of generative AI.

Topic 11. Analyzing a given set of data using MS Excel spreadsheet.

Topic 12. The development of a mechanism for decision implementation.

Topics of the laboratory classes

No laboratory classes

Self-study

Decomposing a complex decision into a number (hierarchy) of sub-decisions and presenting this hierarchy using diagramming tools (MS Word's Smart Art, Miro, Lucidchart, etc ; applying the Fishbone diagram for root cause analysis (collaborative project); choosing an appropriate leadership style for a given decision situation using the Vroom-Yetton-Jago model; solving problems on resource allocation with the help of linear programming using MS Excel spreadsheet; analyzing a given set of data using MS Excel spreadsheet and making recommendations for decision makers; doing comparative analysis of scrum and kanban methodologies; using capterra.com reviews, identifying criteria for selecting project management software; watching a video on key performance indicators (KPI) for a SaaS business, writing a summary and suggesting possible strategies for maximizing (minimizing) KPI; writing a course work based on the application of analytic hierarchy process.

Course materials and recommended reading

- 1 Bonanno G. Decision Making, 2017. http://faculty.econ.ucdavis.edu/faculty/bonanno/PDF/DM_book.pdf
2. Pownall I. Effective Management Decision Making: An Introduction / Ian Pownall & bookboon.com, 2012. - 236 p.
3. Albright C.S., Winston W.L. Data Analysis and Decision Making. 5th Ed./Cengage Learning, 2015.–990 p.
4. Turban E., Meredith J. R. Fundamentals of Management Science / McGraw-Hill, 1998. – 914 p.
5. Mu E., Pereyra-Rojas M. Practical Decision Making: An Introduction to the Analytic Hierarchy Process / Springer Briefs in Operations Research. / Springer, 2017.
<https://link.springer.com/content/pdf/bbm%3A978-3-319-33861-3%2F1.pdf>
6. Dagher K. 10 of the Most Effective Group Decision Making Techniques June 21,2021
<https://fellow.app/blog/productivity/group-decision-making-techniques/>
7. Madden J. A Practical Guide For Consensus-Based Decision Making. London, Ontario, 2017.
<https://www.tamarackcommunity.ca/hubfs/Resources/Tools/Practical%20Guide%20for%20Consensus-Based%20Decision%20Making.pdf>
8. A Guide to the Project Management Body of Knowledge. 6th Ed. / Newtown Square, PA: Project Management Institute, 2017. – 579 p.
9. eMarketing: the essential guide to marketing in a digital world. 6th Ed./ Rob Stokes and the Creative Minds of Red & Yellow, 2018. – 318 p.
10. Gartner | Delivering Actionable, Objective Insight to Executives / Gartner Inc., 2023. URL:
<https://www.gartner.com/en>
11. Gartner Experts Answer the Top Generative AI Questions for Your Enterprise / Gartner Inc., 2023. URL: <https://www.gartner.com/en/topics/generative-ai>
12. Прийняття управлінських рішень : навчальний посібник / [Ю.Є.Петруня, Б. В. Літовченко, Т. О. Пасічник та ін.] ; за ред. Ю.Є. Петруні. – [3- те вид., переробл. і доп.]. – Дніпропетровськ : Університет митної справи та фінансів, 2015. – 209 с.
13. Файнзільберг О.А. Теорія прийняття рішень : підручник / Л.С. Файнзільберг, О.А. Жуковська, В.С. Якимчук. – Київ : Освіта України, 2018. – 246 с. .

Assessment and grading

Criteria for assessment of student performance, and the final score structure

100% final grade is the result of the final assessment (50%) and continuous assessment (50%).

50% Final assessment: the final exam (25 %); the defense of the course work (25 %)

50% Continuous assessment:

- 20% individual and group written assignments;
- 20% mid-term control (an open-question test);
- 10% participation in class discussions

Grading scale

Total points	National	ECTS
90-100	Excellent	A
82-89	Good	B
75-81	Good	C
64-74	Satisfactory	D
60-63	Satisfactory	E
35-59	Unsatisfactory (requires additional learning)	FX
1-34	Unsatisfactory (requires repetition of the course)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

Approval

Approved by

Date, signature

Head of the department
Olena PROKHORENKO

Date, signature

Guarantor of the educational program
Olena LINKOVA