



SYLLABUS “DECISION MAKING METHODS”

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Department responsible for the course or equivalent: Institute of Management in Economic, Ecological and Social Systems; Management and Innovative Technologies Department

Semester when the course unit is delivered: 3rd

Level of course unit: Bachelor level, Master level

ECTS credits: 5

COURSE DESCRIPTION

This course covers theoretical knowledge and practical skills providing the ability to develop managerial decisions based on the application of various methods in the international environment, including: studying the process of making economic and managerial decisions; analyzing situations requiring decisions; studying simple and complex decision-making methods.

COURSE OBJECTIVES (AIMS)

- to understand system view approach creation of various aspects of the structure, management and decision-making of the modern organization at all its levels;
- to acquire the skills of analytical and empirical research of existing organization and decision making processes, development and justification of organization’s improvement;
- to develop decision-making process about the essence of strategies process for the modern organization as a whole and its individual units;
- to develop skills for quantitative and qualitative decision-making methods for organization of management at both micro and macro levels with the identification of short-term and long-term consequences of these decisions;
- to conduct applied research and manage business processes, to prepare analytical materials based on the results of their application;
- to apply decision-making methods and technologies for various forms of organizational and management tasks;
- to manage project, including project organization and responsibilities, organizational models’ selection; scope management, time management,



•Multi-Attribute Utility Theory (MAUT). •Simple Multi Attribute Rating Technique (SMART). •MAUT Decision Analysis (example). •Simple Multi Attribute Rating Technique (SMART) (example). •Final Evaluation Result. •Multi-attribute Utility Methods in Group Decision Making: Past Applications and Potential for Inclusion in GDSS. •Study of the Simple Multi-Attribute Rating Technique For Decision Support.

Session 7. Decision Making Methods.

•Cost-Benefit Analysis. •Discounted cash flows method Net Present Value (NPV). •Weighted Average Cost of Capital (WACC). •Internal Rate of Return (IRR). •Example of CBA Calculation. •Final Evaluation Result. •A Cost-Benefit Analysis of Accessibility Testing in Agile Software Development Results from a Multiple Case Study. •Cost-benefit analysis of investment projects.

Session 8. Decision Making Methods.

•Real option methods. •Types of real options. •Possibilities of using real options method. •Example of the innovation project development. •Limitations of using real options method. •Black – Scholes option pricing model. •Cox-Ross-Rubinstein option pricing model. •Algorithm diagram of a binomial model for innovative project. •Computer program of the innovative project decision making based on real options methodology.

Session 9: Final Examination

LEARNING OUTCOMES

- key management concepts and their decision-making processes for the organization;
- ability to develop corporate strategy, organizational development and change programs and ensure their implementation;
- quantitative and qualitative decision-making methods' application at both micro and macro levels with the identification of short-term and long-term consequences of these decisions for the organization;
- conducting applied research and managing business processes, preparation of analytical materials based on the results of their application;
- decision-making methods and technologies variety and their applications;



- project-management methods and technologies of the organization, methods of economic and strategic analysis of the behavior of economic agents and markets in the global environment.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Theory and practice of decision making methods will be investigated through lecture/class discussion and case study and tasks' examination. The course is intensive and interactive. There are several textbooks for this course, also, a case pack with required and suggested readings and cases will be available. A willingness to discuss, critique and challenge views is also necessary. Most materials (tasks, cases and readings) will be e-mailed to students. The course will use a variety of methods including lectures, case studies, tasks calculation, work groups, discussions and final examination. Links for additional resources are given at the end of this syllabus.

Within the course the individual project on decision-making methods application analyses will be presented as a final case study focusing on providing students with research program in domestic and international business or international business projects.

This individual project on organization decision-making analyses includes:

- collect data in selected business, develop corporate strategy, improve organizational development and change programs and ensure their implementation;
- develop decision-making process of selected business from managerial, organizational, technological, social, human resource and psychological positions;
- apply quantitative and qualitative decision-making methods for organization of management at both micro and macro levels with the identification of short-term and long-term consequences of these decisions;
- conduct applied research and managing business processes, prepare analytical materials based on the results of their application;
- provide recommendations for selected business improvement, taking into account decision-making methods and technologies results;
- make the oral presentation and written report.

Grading

Grade Component	Individual / Group	Weight
Class Participation	Individual /Group	30%
Tasks /Case	Individual /Group	30%
Assignments		
Final Examination	Individual	40%

ASSESSMENT METHODS AND CRITERIA

Criteria for evaluation:



Class Participation

- 26-30 points to the students demonstrating a thorough understanding of the problem comprehensively, consistently, correctly and logically presenting the theoretical material; correctly formulating the definition of topic questions; correctly formulating opinions during topic discussions in the group.
- 21-25 points to the students demonstrating considerable understanding of the problem, knowledge of the basic theoretical concepts; fairly consistently, correctly and logically presenting the material of topic questions; formulating opinions during topic discussions in the group.
- 11-20 points to the students demonstrating considerable understanding of the problem, knowledge of the basic theoretical concepts; fairly consistently, correctly and logically presenting the material of topic questions; not participating in topic discussions in the group.
- 0-10 points to the students demonstrating a partial understanding of the problem, a general knowledge of the material being studied by topic questions; not participating in topic discussions in the group.

Tasks /Case Assignments

- 16-30 total points evaluation of "passed" is given to the students if the decision is consistent formulated, if there is a deeper problem conceived, if he demonstrates an original approach (innovation, creativity); registered alternatives, if there is the possibility of the result use;
- 0-15 total points total evaluation of "not passed" " is given to the students if the decision does not meet the ideas of modern management technologies course, is not adequate; is not sound and doesn't predict difficulties; is not applicable in practice.

Final Case write-up

- Assessment of "excellent" (35-40 points) is given to the student if he introduces a clear thesis or a clear statement of the position consistently settled into a well-organized final case study; presents a balanced argument supported with information; raises important questions; analyzing and convincing conclusions; there are no conceptual errors.
- Assessment of "good" (29-34 points) is given to the students if he introduces basic requirements for the final case study, but permit shortcomings. In



particular, there are inaccuracies in the presentation of the material; there is no logical sequence in the judgment.

- Evaluation of "satisfactory" (22-28 points) is given to the students if the final case study's topic is disclosed not enough; specific position are not given; information is inaccurate, mechanical errors seriously impedes understanding.
- Evaluation of "unsatisfactory" (less than 22 points) is given to the students if the final case study topic does not match, reveals a significant lack of understanding of the problem, arguments are scattered, inconsistent, many dubious or erroneous facts, the text is untidy and hard to read, a lot of grammatical and spelling errors.

COURSE LITERATURE (RECOMMENDED OR REQUIRED)

1. Baker, D.; Bridges, D.; Hunter, R.; Johnson, G.; Krupa, J.; Murphy, J.; Sorenson, K. Guidebook to Decision-Making Methods; US Department of Energy: Washington, DC, USA, 2001. Available online: https://www.researchgate.net/publication/255621095_Guidebook_to_Decision-Making_Methods
2. Guide to Cost-Benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020. Available online: <https://docplayer.net/415860-Guide-to-cost-benefit-analysis-of-investment-projects.html>
3. Handbook of decision making / editors, Paul Nutt, David Wilson. 722 p.
4. Harris, R. Introduction to Decision Making, VirtualSalt. <http://www.virtualsalt.com/crebook5.htm>
5. Kepner, C.H., and Tregoe, B.B., *The New Rational Manager*, Princeton Research Press, Princeton, NJ, 1981
6. Makarova E.L., Firsova A.A. Application of the Real Options Method for Innovation Project Investment Evaluation Advances in Economics, Business and Management Research, volume 94. 4th International Conference on Economy, Judicature, Administration and Humanitarian Projects (JAHP 2019). 344-348 DOI: 10.2991/jahp-19.2019.73
7. Makarova E.L., Firsova A.A. Computer Modeling Algorithm Development of the Innovative Project Effectiveness Evaluation // Proceedings of the Fourth Workshop on Computer Modelling in Decision Making (CMDM 2019).



Atlantis Highlights in Computer Sciences V.2 pp. 56–61. DOI:
10.2991/ahcs.k.191206.010

8. Parmigiani G., Inoue L., Decision theory—principles and approaches. John Wiley & Sons, Chichester, UK, 2009, 402 pp.

Internet resources

9. Decision Analysis Society <http://www.informs.org/Community/DAS>
10. Decision Making Techniques
http://www.mindtools.com/pages/article/newTED_01.htm
11. Group Decision-Making and Problem Solving
<http://managementhelp.org/groups/group-decision-making.htm>