

Course syllabus

1. Core data

Course code	Credits	Semester
MSOA007NABB	6	2024/25/2
Course title in Hungarian		
Business Decision Analytics		
Course title in English		
Business Decision Analytics		
Course title in other language		
Course leader	Institute	
Ábele-Nagy Kristóf	Institute of Operations and Decision Sciences	
Language of instruction	Type of final assessment	
English	Exam	
Number of theoretical classes per week (full-time programmes)	Number of practical classes per week (full-time programmes)	
2	2	
Number of theoretical classes per semester (part-time programmes)	Number of practical classes per semester (part-time programmes)	
0	0	
Available for preferential study schedule		
No		

2. Main features

Course objectives
The course aims to give an introduction to the basic theory and possible applications of decision analytics, and to prepare the students to be able to recognize, formulate, and analyze various types of decision situations by applying quantitative models and their numerical solutions.
Brief description of the course
Model building; linear, non-linear and integer programming; sensitivity analysis; project scheduling; decision models, utility theory.
Relationship with other courses of the programme
This course is a continuation of the logical principles of the Statistical Business Analytics course. As mathematical modelling requires exact and logical thinking, the study of data-based symbolic models is also useful in strengthening the abstract thinking of students.

3. Learning outcomes

Skill	Knowledge	Attitude	Autonomy and Responsibility
Aware of the power and usefulness, but also the possible pitfalls of using quantitative methods in the analysis and solution of complex decision situations.	Able to recognize the boundaries of applications of quantitative models.	Students will acknowledge the applicability of operations research techniques for describing and analyzing complex systems. Students gain confidence and willingness to use their knowledge in practical problem solving in real-life situations.	Formulating models. Consideration of solution method pitfalls and specialties. Interpretation of all relevant data and the solution.
	Able to recognize the situations that can be analyzed using quantitative methods.		
	Able to solve relevant quantitative models.		
Cognizant of the solution techniques available to solve the appropriate	Able to solve more advanced models using a computer.	Accurate consideration of limitations. Precise application of algorithms.	

models.	Able to utilize graphical solution for basic linear models.	Accurate interpretation of the results.
	Able to solve simple models manually.	
Able to build simple mathematical models most appropriate for the available data.	Able to build basic integer programming models for optimization.	
	Able to build basic linear programming models for optimization.	
	Able to recognize when it is necessary to use nonlinear optimization methods.	
Able to make sense of the computer outputs, and to perform what-if analysis.	Able to conduct sensitivity and what-if analysis.	
	Able to interpret and analyze computer solution outputs.	

4. Mandatory readings

Required literature	URL
Essentials of Business Analytics, Second Edition, 2017, Cengage Learning Jeffrey D. Camm, James J. Cochran, Michael J. Fry, Jeffrey W. Ohlmann, David R. Anderson, Dennis J. Sweeney, Thomas A. Williams	