

Course title:	Econometrics and operation research				Code:
Field of study:	Tourism and recreation				Year/Semester: 3
Specialization:	Management and marketing				Modes: F/E
Number of hours / semester 60/32					ECTS credits: 3
Lectures: 30/16	Classes: 30/16	Laboratories:	Projects:	Seminars:	

Department: Management and Marketing

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Course position in the study programme:

- specialization course

Objectives:

- presentation of selected mathematical and statistical methods supporting management.

Course contents:

1. The nature of operations research. Operations research methodology. A classification of decision problems.
2. Linear programming methods: the simplex algorithm
 - a) the butcher's problem (graphical and algebraic solution)
 - b) detailed steps for finding a new basic solution in the simplex algorithm, tabular format, slack variables and artificial variables
 - c) computer solutions to linear programming problems
3. Linear programming methods: the transportation problem
 - a) a transportation problem
 - b) an initial solution, improving the initial solution, the next solution
 - c) mathematical statement of the transportation problem
4. Deterministic analysis network
 - a) critical path method (CPM and CPM-COST)
 - b) program evaluation and review technique (PERT and PERT-COST)
5. Decisions under uncertainty and risk
 - a) determining of optimal quantity resources
 - b) analysis of waiting lines

6. The nature of the econometric approach, the general structural form of econometric model
7. Linear econometric models:
 - a) selection of variables explaining economic phenomena
 - b) determining structural parameters of model (the least-squares estimation method) and parameters stochastic structure of model
 - c) examination accuracy of model
8. Some remarks about the econometrical prediction

Teaching methods: lectures, classes

Assessment methods: written final quiz comprising lectures and classes

Recommended reading:

Compulsory:

1. Guzik B. (red.), *Ekonometria i badania operacyjne*, Wyd. Akademii Ekonomicznej, Poznań 2002
2. Kukułka K. i inni, *Badania operacyjne w przykładach i zadaniach*, PWN, Warszawa 1994
3. Nowak E., *Zarys metod ekonometrii*, PWN, Warszawa 1994

Supplementary:

1. Thiel H., *Principles of econometrics*, Toronto 1971
2. Plane D.R., Kochenberger G.A., *Operations research for managerial decisions*, RD 1972