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| Course title: | Mathematics | | | | Code: |
| Field of study: | Tourism and recreation | | | | Year/Semester: 1 |
| Specialization: | Management and marketing | | | | Modes: F/E |
| Number of hours / semester 60/32 | | | | | ECTS credits: 6 |
| 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 chosen higher mathematics problems with some applications to economical analysis.

Course contents:

1. Elements of mathematical logic and sets theory
2. Basic concepts of linear algebra:
 - a) matrices and matrix operations
 - b) determinant of matrix
 - c) matrices and systems of linear equations
3. Linear programming:
 - a) formulation of linear programming problems
 - b) the graphical method for linear programming
 - c) the simplex method for linear programming
 - d) the dual problem
4. Differential calculus – functions of one variable
 - a) limits and continuity of functions
 - b) derivative, basic rules of differentiation
 - c) increasing and decreasing functions
 - d) concavity and derivatives of higher order
 - e) relative maximum and minimum values of a function

- f) absolute extreme values
- 5. Interpreting of mathematical concepts in economical categories
- 6. Antidifferentiation (indefinite integral) and the definite integral:
 - a) basic rules of integration
 - b) applications of the definite integral to solving economical problems
- 7. Differential calculus – functions of several variables:
 - a) functions of two and three variables
 - b) partial derivatives
 - c) applications of partial derivatives, relative maximum and minimum values

Teaching methods: lectures, classes

Assessment methods: written final quiz comprising lectures and classes

Recommended reading:

Compulsory:

1. Swokowski W., Calculus with analytic geometry, Boston 1987
2. Gruszka J., Kaczmarek L., Elementy matematyki wyższej, Wyd. WSKiZ, Poznań 2004
3. Schelin C.W., Bange D.W., Calculus for business and economics, Boston 1989

Supplementary:

1. Matolka M., Matematyka dla ekonomistów, Wyd. Akademii Ekonomicznej, Poznań 2000
2. Matolka M., Wojcieszyn B., Matematyka z elementami zastosowań w ekonomii, Wyd. WSB, Poznań 2000