

Mathematical Economics 2 - course description

General information	
Course name	Mathematical Economics 2
Course ID	11.1-WK-MATD-EM2-W-S14_pNadGen05KRB
Faculty	Faculty of Mathematics, Computer Science and Econometrics
Field of study	Mathematics
Education profile	academic
Level of studies	Second-cycle studies leading to MS degree
Beginning semester	winter term 2019/2020

Course information	
Semester	4
ECTS credits to win	7
Course type	optional
Teaching language	polish
Author of syllabus	<ul style="list-style-type: none">dr hab. Zbigniew Świtalski, prof. UZ

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Exam
Class	30	2	-	-	Credit with grade

Aim of the course

Knowledge of basic mathematical models used in economics (mainly in microeconomics).
Understanding possibilities and limitations of mathematical modeling in economics. Training skills of formal description of economic notions and interdependencies between them.

Prerequisites

Basic Linear Algebra and Mathematical Analysis.

Scope

1. The role of mathematics in economics. Possibilities and limitations of mathematical modelling in economics. (2 h.)
2. Consumer preferences (preference relations, utility functions). (6 h.)
3. Optimization models in consumer theory. Mathematical demand theory. (4 h.)
4. Production spaces and production functions. (4 h.)
5. Optimization models in the neo-classical theory of the firm. (4 h.)
6. Partial and general equilibrium. Cobweb model. Edgeworth box. Arrow-Hurwicz theorem. (6 h.)
7. Leontief's input-output model. Productive matrices and their properties (4 godz.).

Teaching methods

Lecture, classes (solving the problems, discussions, consultations).

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Student knows basic mathematical models used in economics, is able to present them in a formal manner and to interpret them, understands simplifying assumptions appearing in such models; basic economic notions which appear in the models of mathematical economics and is able to formalize them; basic measures of economic quantities and is able to interpret them formally.		<ul style="list-style-type: none">• a final test• activity during the classes• an exam - oral, descriptive, test and other	<ul style="list-style-type: none">• Lecture• Class
Student is able to analyze and solve graphically the problem of utility maximization and the problem of expenditure minimization for the consumer and the optimization problems in the neo-classical theory of the firm; to compute marginal quantities, elasticities, rates of substitution and interpret them; to study basic properties of production functions and production spaces. 7. Is able to analyze relationships between outputs, final demands and flows in the Leontief model		<ul style="list-style-type: none">• a final test• activity during the classes• an exam - oral, descriptive, test and other	<ul style="list-style-type: none">• Lecture• Class

Assignment conditions

1. Verification of activity of students during the classes.
2. Writing tests during the classes.
3. Writing exam.

Final score = Activity + writing tests (50 %), exam (50 %).

Recommended reading

1. Chiang A., Podstawy ekonomii matematycznej, PWE, Warszawa 1994.
2. Panek E., Elementy ekonomii matematycznej. Statyka, PWN, Warszawa 1993.
3. Panek E., Elementy ekonomii matematycznej. Równowaga i wzrost, PWN, Warszawa 1997.
4. Panek E., Ekonomia matematyczna, Wyd. AE, Poznań 2000.
5. Panek E., Podstawy ekonomii matematycznej. Elementy teorii popytu i równowagi rynkowej, Materiały dydaktyczne nr 165, Wyd. AE Poznań, 2005.
6. Panek E., Podstawy ekonomii matematycznej. Elementy teorii produkcji i równowagi ogólnej, Materiały dydaktyczne nr 173, Wyd. AE Poznań, 2005.
7. Moore, J.C., General equilibrium and welfare economics, Springer, Berlin 2007.

Further reading

1. Allen R.G.D., Ekonomia matematyczna, PWN, Warszawa 1961.
2. Ostoja-Ostaszewski A., Matematyka w ekonomii, cz. 1,2, PWN, Warszawa 1996.

Notes

Modified by dr Alina Szelecka (last modification: 03-07-2019 12:29)

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