MODELING ECONOMIC PROCESSES AND DECISSIONS OPTIMIZATION

Static linear models of optimization

Models of profit maximization, transportation models with minimal costs, optimal allocation models, competition models, optimal investment models Optimal solutions of linear problems by numerical methods

Static nonlinear models of optimization

Maximum (minimum) points for real functions depending on n variables. with or without constraints Convex functions. Concave functions. Quasiconcave functions. Nonlinear programming Equality constraints. The Lagrange problem Inequality constraints. The Kuhn-Tucker problem Convex programming without differentiability

Evolution models

Dynamical systems. Equilibrium points. Limit cycles. Business cycle models. Growth models. IS-LM models. Advertising models. Phase dynamics simulations using the software WINPP

Elements of Graph Theory

Ford algorithm Ford-Fulkerson algorithm Kruskal algorithm

References

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- 2. Ermentrout, B. Simulating, analyzing and animating dynamical systems: a guide to xppaut for researches and students, SIAM, 2002.
- 3. Fuente A., Mathematical Methods and Models for Economics, Cambridge Univ. Press, 2000.
- 4. Rocșoreanu, C.- Bifurcations of Continuous Dynamical Systems. Applications to Economy and Biology, Universitaria, Craiova, 2006 (Romanian).
- 5. Rocșoreanu C.- Modeling Economic Processes and Decissions Optimization, Universitaria, Craiova, 2011 (Romanian).
- 6. Shone R., *Economic Dynamics. Phase Diagrams and their Economic Application*, 2nd Edition, Cambridge, 2002.
- 7. Sterpu M., Rocsoreanu C. *Modeling and Simulating Economic Processes*, Universitaria, Craiova, 2007 (Romanian).
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