



Academia de Studii Economice
Departamentul de Informatică și Cibernetică Economică

Calea Dorobanți, 15-17, Sector 1, București, 010552 (camera 2314)

Tel.: +40 21 319 19 00, ext. 319, 336, Fax: +40 21 311 20 66

www.dice.ase.ro

Contest Topics for Associate Professor
Position 59, semester 1, year 2022-2023

Topics: Analysis and Diagnosis of Economic Systems; Bases of Operational Research; Risk Management; Quantitative Macroeconomics (in English)

Analysis and Diagnosis of Economic Systems

1. Analysis and diagnosis of economic systems (ADSE) - object of study, genesis, theoretical and methodological sources, trends, theoretical and applied approaches, connections with other disciplines of quantitative analysis
2. Reference concepts of systems analysis: system, subsystem, metasystem, connections, internal environment, external environment
3. The structure, functionality and behavior of economic systems
4. Systemic approach methods - classic and modern theories
5. Diagnosis of economic systems: objectives, principles, stages, areas of applicability, finality
6. SWOT, informational-decisional and conceptual diagnostic analysis methodologies
7. Economic, financial and management diagnosis; Commercial diagnosis; Production / technical diagnosis; Diagnosis of human resources; Managerial diagnosis; Informational-decisional diagnosis
8. Measurement and monitoring of performance resulting from ADSE-performance metrics
9. Elaboration of the Dashboard for the efficiency of operational, tactical and strategic decisions of the system

Bibliography

1. Adrian Victor Bădescu, Dana Maria Boldeanu, Nora Monica Chiriță, Ioana Alexandra Bradea, *Bazele analizei și diagnozei sistemelor economice*, Economica, 2014, România, ISBN: 978-973-709-692-0
2. Păun M., "Analiza sistemelor economice", Ed. ALL, București, 1997
3. Păun M., Bădescu A., Hartulari C., Albu C., "Analiza sistemelor economice – Studii de caz", ed. Matrix-Rom, București, 1998
4. Păun M., Hartulari C., Bădescu A., "Analiza și diagnoza sistemelor economice", Ed. ASE, București, 2001
5. Licker S.P., "Fundamentals of Systems Analysis with Applications Design", Boyd & Frazee Publishing Company, Boston, 1987
6. Biazzo, Stefano, Garengo, Patrizia, Performance with the Balanced Scorecard, Springer
7. Systems Evaluation, Methods, Models and Applications, Lin, Yi (editor), CRC Press, Taylor & Francis Group



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Bases of Operational Research

1. Network optimization: Concepts and definitions specific to graph theory. Typology of networks. Graph based modeling. Minimum cost trees. Roads of optimum value in transport networks. Software packages for network optimization.
2. Management of complex projects (Critical path analysis): Leading a project by building the Coordinating Network Graph. Construction of the coordinating network using the representation "activity - node ". Gantt chart drawing. Optimization of resource allocation in complex project management.
3. Optimization methods in the transport and distribution networks. Maximum flow in transport networks: Types of economic problems modeled by flow in networks. Flow in the transport and distribution networks. The Ford-Fulkerson algorithm for determining the maximum value flow in a transport network. Applications. The problem of supply and demand.
4. Optimization of economic processes using Linear Programming (LP): Introduction to the modeling process. Linear example. The general form of a linear programming problem (LP). Permissible solutions to a (LP) problem. Forms of presentation of a problem of (LP): canonical form, standard form.
5. Duality in linear programming. Rules for the construction of the dual problem. Duals of particular forms of problems of (LP). Duality theorems. The economic interpretation of duality.
6. Optimization methods in transport and distribution networks. The classic transport problem (TP). The problem of balanced transport (BTP). Methods of solving BTP. Determination of an initial basic allowable solution (Minimum cost method on the table and Vogel method). Testing the optimality of a basic permissible BTP solution. Improvement of a basic solution. Algorithm for solving PTE. Convergence. Degeneration. Variants of the transport problem. TP unbalanced. Balancing modes. TP with blocked routes. Other economic problems reducible to the problem of transport

Bibliography

1. Ciobanu, Gh., Nica, V., Mustață, Fl., Măracine, V. Mitrut, D, Cercetări operaționale. Optimizări în rețele. Teorie și aplicații economice, MATRIX ROM, București, 2002, România
2. Ciobanu, Gh., Nica, V., Mustață, Fl., Măracine, V., Cercetări operaționale cu aplicații în economie. Teoria grafurilor și Analiza drumului critic, MATRIX ROM, București, 1996, România
3. Nica, V., Ciobanu, Gh., Mustață, Fl., Măracine, V. , Cercetări Operaționale - Programare liniară, Probleme de optimizare în rețele de transport și distribuție, Teoria jocurilor strategice, MATRIX ROM, București, 1998, http://asecib.ase.ro/cursuri_online.htm, cap. 1 și 2, România
4. White , J. and White, L. , A review of the recent contribution of systems thinking to operational research and management science, European Journal of Operational Research, Volume 207, Issue 3, Pages 1147-1161, <http://www.sciencedirect.com/science/article/pii/S0377221709009473>
5. Cominetti, R., Facchinei, F., Lassere, J.B. , Modern Optimization Modelling Techniques, Advanced Courses in Mathematics - CRM Barcelona, Barcelona, 2013, Spania
6. COOKE, S., SLACK, N. , Making Management Decision, Prentice Hall International UK Ltd., 1991, Marea Britanie
7. Dantzig, G. B., & Thapa, M. N. , Linear programming. 1: Introduction, Springer-Verlag, 1997
8. HILLIER, F. S., LIEBERMAN, G. I. , Introduction to Operations Research, ediția a 8-a, McGraw Hill Publishing Co., New York, 2005, Statele Unite ale Americii



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9. LAPIN, L. , Quantitative Methods for Business Decisions - with Cases, Harcourt Brace Jovanovich Publishers and its subsidiary, Academic Press, 1991
10. Oliveira, C.A., Pardalos, P.M. , Mathematical Aspects of Network Optimization, Springer Optimization and its Applications, vol. 53, 2011
11. Zelinka, I., Snasel, V., Abraham, A. (editori) , Handbook of Optimization. From Classical to Modern Approach, Intelligent Systems Reference Library, vol. 38, 2012

Risk Management

1. The main classical sources of risk. The attitude towards risk in the socio-economic context
2. Business (enterprise) risk and its management
3. Risk management strategies
4. Strategies for "treating" potential risks
5. Risk response plan: design and monitoring
6. Quantitative methods in Enterprise Risk Management
7. Business (enterprise) risk modeling
8. Methods of managing the risk of tangible (real) investments
9. Financial Risk management methods
10. Risk management using derivative contracts (Hedging)
11. New paradigms in risk management in contemporary society
12. Catastrophic risk
13. Risks associated with health
14. Cyber Risk - Security risk in information systems. Designing resilient telecommunications networks

Bibliography

1. Davidson Frame, J. , Managing Risk in Organizations: A Guide for Managers, John Wiley & Sons Ltd., 2003
2. Lam, J. , Enterprise Risk Management: From Incentives to Controls, John Wiley & Sons Ltd., 2003
3. Mărăcine, V. , Economia și Gestiunea Riscului - suport de curs, A.S.E., ASE București, 2013
4. Coleman, S. T. , A practical guide to risk management, The Research Foundation of CFAInstitute, 2011, www.cfapubs.org
5. Emblemsvag, J. , Risk Management for the Future. Theory and Cases, InTech, 2012, Croatia (Hrvatska)
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10. Sironi, A., Resti, A. , Risk Management and Shareholders' Value in Banking: From Risk Measurement Models to Capital Allocation Policies, John Wiley & Sons, Chichester, West Sussex, 2007

Quantitative Macroeconomics (in English)

1. Fundamental concepts of macroeconomic modeling. Principles of macroeconomic modeling
2. Macroeconomic aggregates: construction, evaluation and analysis of interdependencies, correlations and fundamental proportions
3. Market mechanism: neo-Keynesian models of macroeconomic balance on the market of goods and services - the IS model
4. Market mechanism: neoknesian models of macroeconomic balance on the money market and the labor market. Equilibrium of markets
5. The influence of the external sector on the macroeconomic balance
6. Macroeconomic analysis of inflation and unemployment
7. Cyclical fluctuations of the economy: definition of economic cycles, indicators of economic cycles, economic cycles and political cycles, active and passive anti-cyclical economic policies
8. Economic growth in the context of European integration

Bibliography

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2. Țigănescu I.E., Roman, M., Macroeconomie. O abordare cantitativă, Economica, Bucuresti, 2005, România
3. Băcescu M., Băcescu-Carbunaru A., Macroeconomie intermediară, Universitară, Bucuresti, 2004, România
4. Mankiw, N.G., Macroeconomics The 5-th edition, Worth Publishers, New York, 2002, SUA