# SEMRA AĞRALI

# **PROFESSOR**

# FACULTY OF ENGINEERING, DEPARTMENT OF INDUSTRIAL ENGINEERING

agralis@mef.edu.tr

#### **EDUCATION**

| DEGREE        | DEPARTMENT             | UNIVERSITY                    | YEAR |
|---------------|------------------------|-------------------------------|------|
| PhD           | Industrial and Systems | University of Florida         | 2009 |
|               | Engineering            |                               |      |
| MASTERS       | Industrial Engineering | Koç University                | 2005 |
| UNDERGRADUATE | Industrial Engineering | Istanbul Technical University | 2003 |

# **ACADEMIC APPOINTMENTS**

| TITLE          | DEPARTMENT              | UNIVERSITY                     | YEAR      |
|----------------|-------------------------|--------------------------------|-----------|
| ASST. PROF.    | Industrial Engineering  | Bahçe <b>ş</b> ehir University | 2009-2013 |
| ASSOC. PROF.   | Industrial Engineering  | Bahçe <b>ş</b> ehir University | 2013-2016 |
| ASSOC. PROF.   | Industrial Engineering  | MEF University                 | 2016-2018 |
| PROFESSOR      | Industrial Engineering  | MEF University                 | 2018      |
| VISITING PROF. | Econometrics/Operations | Erasmus University             | 2019-2020 |
|                | Research                | Rotterdam                      |           |

#### RESEARCH AREAS

- Optimization Problems in Energy Investment Planning
- Lot Sizing Problems with Co-Production
- Scheduling Problems in Service Operations
- Mixed-Integer Nonlinear Programming Problems in Supply Chain Management
- Nonlinear Knapsack Problems

# **PUBLICATIONS (SCIE, SSCI, AHCI)**

- van den Heuvel, W., S. Ağralı, Z.C. Taşkın, "A Decomposition Algorithm for Single and Multi-Objective Integrated Market Selection and Production Planning Problem," INFORMS Journal on Computing, 35(6), 1439-1453, 2023.
- Pamuk, B.\*, S. Ağralı, Z.C. Taşkın, B. Kabakulak, "A Lot-Sizing Problem in Deliberated and Controlled Co-Production Systems," ISE Transactions, 54(10), 950-962, 2022.
- Unal, A.T., S. Ağralı, Z.C. Taşkın, "Strong Integer Programming Formulations for Hybrid Flowshop Scheduling," Journal of Operational Research Society, 71(12), 2042-2052, 2020.

- Adıyeke, E.\*, E. Canakoğlu, S. Ağralı, "Risk Averse Investment Strategies in a Carbon Constrained Environment," Journal of Operational Research Society, 70(12), 2056-2068, 2019.
- Yahşi, M.\*, E. Canakoğlu, S. Ağralı, "Carbon Price Forecasting Models Based on Big Data Analytics," Carbon Management, 10(2), 175-187, 2019
- Adıyeke, E.\* E. Canakoğlu, S. Ağralı, "Modeling of Carbon Credit Prices using Regime Switching Approach," Journal of Renewable and Sustainable Energy, 10(3), 035901, 2018.
- Ağralı, S., F.G. Üçtuğ, B. Atılgan, "An Optimization Model for Carbon Capture & Storage/Utilization vs. Carbon Trading: A Case Study of Fossil-Fired Power Plants in Turkey," Journal of Environmental Management, 215, 305-315, 2018.
- Üçtuğ, F.G., S. Ağralı, "Nonlinear Benefit-Cost Optimization-Based Selection of Insulation Material and Window Type: A Case Study in Turkey," Journal of Renewable and Sustainable Energy, 9(3), 065102, 2017.
- Ağralı, S., F. Terzi\*, E. Canakoğlu, E. Adıyeke\*, Y. Arıkan, "Energy Investment Planning at a Private Company: A Mathematical Programming-Based Model and Its Application in Turkey," IEEE Transactions on Power Systems, 32(6), 4180-4187, 2017.
- Üçtuğ, F.G., S. Ağralı, "Simple Nonlinear Benefit-Cost Optimization-Based Selection of Insulation Material and Window Type: Effect of Heating and Cooling Base Temperatures," Journal of Green Building, 12(2), 79-94, 2017.
- Ağralı, S., Z.C. Taşkın, A.T. Unal, "Employee Scheduling in Service Industries with Flexible Employee Availability and Demand," Omega, 66,, 159-169, 2017.
- Taşkın, Z.C., S. Ağralı, A.T. Unal, V. Belada, F.G. Yılmaz, "Mathematical Programming-Based Sales and Operations Planning at Vestel Electronics," Interfaces, 45(4), 325-340, 2015.
- Üçtuğ, F.G., S. Ağralı, Y. Arıkan, E. Avcıoğlu\*, "Deciding between carbon trading and carbon capture and sequestration: An optimisation-based case study for methanol synthesis from syngas," Journal of Environmental Management, 132, 1-8, 2014.
- Selcuk, B., S. Ağralı, "Joint Spare Parts Inventory and Reliability Decisions under a Service Constraint," Journal of Operational Research Society, 64, 446-458, 2013.
- Ağralı, S., J. Geunes, Z.C. Taşkın, "A Facility Location Model with Safety Stock Costs: Analysis of the Cost of Single-Sourcing Requirements," Journal of Global Optimization, 54(3), 551-581, 2012.
- Ağralı, S., "A Dynamic Economic Lot-Sizing Problem with Co-Production," Optimization Letters, 6(6), 1051-1061, 2012.
- Ağralı, S., J. Geunes, "A Single-Resource Allocation Problem with Poisson Resource Requirements," Optimization Letters, 3(4), 559-571, 2009.
- Ağralı, S., J. Geunes, "Solving Knapsack Problems with S-Curve Return Functions," European Journal of Operational Research, 193, 605-615, 2009.
- Ağralı, S., B. Tan, F. Karaesmen, "Modeling and Analysis of an Auction-Based Logistics Market," European Journal of Operational Research, 191(1), 272-294, 2008.

\*Students that are either advised or funded with TUBITAK (Turkish National Science Foundation) projects.

#### **PROCEEDINGS**

 Arikan, Y., S. Ağralı, E. Canakoglu and F. Terzi, "Mathematical Modeling of Generation Expansion Planning Problem in a Partially Regulated Market: Private Company Perspective," In Energy: Expectations and Uncertainty, 39th IAEE International Conference, Jun 19-22, 2016, International Association for Energy Economics, 2016.

- Ağralı, S., J. Geunes, C. Rainwater, "Component Procurement Planning and Product Portfolio Design Problem," Proceedings of the Annual Industrial Engineering Research Conference, Cancun, Mexico, 2010.
- Tan, B., F. Karaesmen, S. Ağralı, "Modeling and Analysis of a Logistics Auction Market," Proceedings of The Fifth International Conference on Analysis of Manufacturing Systems- Production Management, Zakynthos, Greece, 2005.

#### **AWARDS AND HONORS**

- Goodeve Medal 2020, The Operational Research Society, 2020
- EURO Excellence in Practice Award (EEPA) finalist, Glasgow, July 2015
- Graduate Research and Teaching Assistantship (during Ph.D. study), August 2005 –
   August 2009 University of Florida, Gainesville, FL, USA
- Graduate Scholarship (during M.S. study), September 2003 June 2005 Koç University, Istanbul, Turkey
- Vehbi Koç Foundation Scholarship (during B.S. study), September 1998 June 2003

#### **ADVISED THESES OR DISSERTATIONS**

- Co-Advisor, Eyüp Ensar Işık (PhD Expected, 2026, Boğaziçi University), Thesis title: TBA
- Co-Advisor, Stephan Kroon (MSc 2021, Erasmus University Rotterdam), Thesis title:
   Optimising the dynamic uncapacitated lot-sizing problem with inventory bounds and co-production units
- Co-Advisor, Bahadır Pamuk (MSc 2018, Boğaziçi University), Thesis title: Lot Sizing Problems in a Deliberated and Controlled Co-Production System
- Co-Advisor, Fulya Terzi (MSc 2016, Boğaziçi University), Thesis title: Mathematical Programming Approaches for a Generation Expansion Planning Problem in a Carbon-Constrained Environment
- Advisor, Zeynep Sezer (MSc 2013, Bahçeşehir University), Thesis title: An Exact Solution Algorithm for the Coordinated Capacitated Lot-Sizing Problem

#### **PROJECTS**

| FUNDING ORGANIZATION | TÜBİTAK 1001   |
|----------------------|--|
| ROLE                 | Researcher   |
| PROJECT TITLE        | Simultaneous Lot-sizing and Scheduling Problems in Co-<br>production Systems and Efficient Solution Algorithms |
| START-END DATES      | March 2024 – October 2026  |
| BUDGET               |  |

| FUNDING ORGANIZATION | TÜBİTAK 2219  |  |
|----------------------|---|--|
| ROLE                 | Principal Investigator  |  |
| PROJECT TITLE        | Production Planning Problems for Co-Production Systems Under Inventory Bounds |  |
| START-END DATES      | September 2019 – August 2020  |  |
| BUDGET               | €18,900   |  |

| FUNDING ORGANIZATION | TÜBİTAK 1001           |
|----------------------|------------------------|
| ROLE                 | Principal Investigator |

| PROJECT TITLE               | Lot-Sizing Models for Co-Production Systems and Their Solution Algorithms |  |
|-----------------------------|---|--|
| START-END DATES             | April 2017 – October 2019   |  |
| BUDGET                      | <b>老236,575 (~\$64,300)</b>   |  |
| <b>FUNDING ORGANIZATION</b> | TÜBİTAK 1001  |  |
| ROLE                        | Principal Investigator  |  |
| PROJECT TITLE               | Optimization models for energy investment planning in a                   |  |
|                             | carbon constrained environment and the analysis of these                  |  |
|                             | models from the economic and strategic planning point of view             |  |
| START-END DATES             | October 2014 – October 2016   |  |
| BUDGET                      | <b>老199,700 (~\$90,800)</b>   |  |

# INSTITUTIONAL EXPERIENCES / COLLABORATIONS / CONSULTANCIES

- Academic Consultant, TURKCELL, "Improving the Customer's Experience on Onedesk Ticketing Systems Through Process Mining," October 2021 – April 2022
- Academic Consultant, TAM Finance, "People Analytics," March 2020 February 2021
- Graduate Researcher, MERCK & Co. Inc., PA, USA, "Distribution planning of sample bottles," May 2007 – December 2007
- Graduate Researcher, MERCK & Co. Inc., PA, USA, "Solving Multi-Channel Resource Allocation Problems under Uncertainty," September 2006 – September 2007

#### **ACADEMIC SERVICE**

- Vice President for Research, MEF University, March 2023 ...
- Executive Board Member, MEFTEK AŞ, April 2023 ...
- Faculty Executive Board Member, Faculty of Engineering, MEF University, September 2023 ...
- Department Chair, Department of Industrial Engineering, MEF University, September 2016 – September 2019
- Faculty Board Member, Faculty of Engineering, MEF University, September 2016
   September 2019
- Acting Director of School of Engineering and Natural Sciences, Bahçeşehir University, February 2015 - June 2016

#### **TEACHING EXPERIENCE**

#### **MEF University**

- IE332 Exploratory Data Analytics (Fall 2021, 2022, 2023)
- IE306 Supply Chain Management (Spring 2017, 2018, 2019, 2021, 2022, 2023, 2024)
- IE 401 Information Systems (Fall 2018, 2020, 2021, 2022)
- IE 208 Operations and Facilities Planning (Spring 2021)
- IE301 Operations Research II (Fall 2016, 2017)

#### **Bahcesehir University**

- INE6101 Linear Optimization (Fall 2012, 2013, 2014, 2015)
- INE6204 Network Optimization (Spring 2013)
- INE5144 Advanced Optimization Techniques (Spring 2010, 2011)
- INE5111 Mathematical Programming and Modeling (Fall 2010)
- SE 5418 Operations Research for IT and Service Management (Spring 2011)
- INE4301 Scheduling and Sequencing (Spring 2012)

- INE2008 (formerly IE3001) Operations Research I (Fall 2009, 2010, 2012; Spring 2015, 2016)
- INE3009 (formerly IE 3002) Operations Research II (Spring 2010, 2011, 2012, 2013; Fall 2013, 2014, 2015)

# Instructor at University of Florida

- EIN4365 Facilities Planning and Materials Handling (Spring, 2009)
- EIN4365 Facilities Planning and Materials Handling (Fall, 2008)