ALİ KOÇ

Academic Curriculum Vitae | Industrial Engineering

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ACADEMIC PROFILE

Industrial Engineering Ph.D. and research assistant with experience in operations research, mathematical modelling, optimization, and academic teaching support. Experienced in assisting core undergraduate courses, coordinating examination processes, and contributing to applied industrial engineering projects in healthcare, manufacturing systems, logistics, and process improvement.

RESEARCH INTERESTS

Operations Research | Mathematical Modelling and Optimization | Vehicle Routing Problems | Logistics and Transportation | Simulation | Manufacturing Systems | Process Improvement | Machine Learning | Heuristics |

EDUCATION

September 2020 – June 2026 — **Ph.D. in Industrial Engineering**, Hacettepe University | *Ankara, Turkey*
CGPA: 3.43/4.00 | Total Credits: 34
Thesis project: Heuristic and Reinforcement Learning- Based Approaches for Multi-Objective Vehicle Routing Problems with Time Windows

September 2013 – April 2017 — **M.Sc. in Industrial Engineering**, Hacettepe University | *Ankara, Turkey*
CGPA: 3.50/4.00 | Total Credits: 21
Thesis project: Modeling of flexible manufacturing systems with Process-based Petri Nets.

2008 - 2013 — **B.Sc. in Industrial Engineering**, Hacettepe University | *Ankara, Turkey*
CGPA: 3.04/4.00 | Total Credits: 151

2004 - 2007 — **High School Diploma**, Ankara High School of Science | *Turkey*
Graduation score: 88.81/100

ACADEMIC APPOINTMENT

May 2014 - Present — **Research Assistant**, TED University, Department of Industrial Engineering | *Ankara, Turkey*

- Assisted teaching, assessment, grading, and course coordination activities for undergraduate industrial engineering courses.
- Supported departmental academic operations and student-facing instructional processes.

TEACHING ASSISTANCE

CMPE 101: Introduction to Information Technologies
IE 212: Lean Process Design
IE 232: Mathematical Modelling and Optimization I
IE 222: Engineering Economy and Cost Analysis
IE 311: Manufacturing and Service Operations Planning I
IE 312: Manufacturing and Service Operations Planning II
IE 331: Mathematical Modelling and Optimization II
IE 341: Simulation
IE 399: Summer Practice I
IE 413: Operations Scheduling
IE 451: Decision and Risk Analysis
IE 461: Supply Chain Management
IE 466: Humanitarian Logistics
IE 471: Computational Tools for Industrial Engineers
IE 438: Discrete Optimization
IE 491: Senior Project-I
IE 492: Senior Project-II
IE 499: Summer Practice II
ENGR 490: Contemporary Issues in Engineering

SELECTED ACADEMIC PROJECTS

Oct 2012 - Jun 2013 — **Graduation Project: Bed Management and Utilization at Hacettepe University Hospitals**

- Applied statistical techniques and Box-Jenkins forecasting models to estimate required bed capacity.
- Developed simulation-based solution proposals for inefficient bed management caused by weak data collection and interpretation processes.

Apr 2017 — **Master Thesis Project: Modeling of Flexible Manufacturing Systems with Process-based Petri Nets**

- Modeled flexible manufacturing systems using process-based Petri nets to represent process flows, resource interactions, and system behavior.

June 2026 — **Doctoral Thesis Project: Heuristic and Reinforcement Learning- Based Approaches for Multi-Objective Vehicle Routing Problems with Time Windows**

- Developed heuristic and reinforcement learning-assisted evolutionary approaches for multi-objective vehicle routing problems with time windows.
- Designed and evaluated Q-learning-based operator selection strategies within a genetic algorithm framework, considering route duration, vehicle usage, and customer satisfaction objectives.

ACADEMIC PUBLICATIONS

Koç, A., & Bütüner, H. (2024). Organizational structure: A systematic approach to human resources' process improvement. SAGE Business Data Decisions. https://doi.org/10.4135/9781071962206

Koç, A., Tezcaner Öztürk, D., & Tuncer Şakar, C. (2026). A novel reinforcement learning–assisted genetic algorithm for the multi-objective capacitated vehicle routing problem with time windows. International Journal of Industrial Engineering Computations, 17. Advance online publication. https://doi.org/10.5267/j.ijiec.2026.5.004 Available online: https://www.growingscience.com/ijiec/online/IJIEC_2026_45.pdf

CONFERENCE PRESENTATIONS

International Conference Presentations

Koç, A., & Tezcaner Öztürk, D. (2023, October 2–4). *A reinforcement learning based approach for the multi-objective traveling salesman problem: Q-learning*. Paper presented at the 15th International Conference on Multiple Objective Programming and Goal Programming — MOPGP 2023, İzmir, Türkiye.

Koç, A., Tezcaner Öztürk, D., & Tuncer Şakar, C. (2026, May 25–29). *A novel reinforcement learning-assisted genetic algorithm for the multi-objective capacitated vehicle routing problem with time windows*. Paper presented at the 28th International Conference on Multiple Criteria Decision Making — MCDM 2026, University of Wuppertal, Wuppertal, Germany.

National Conference Presentations

Koç, A., Tezcaner Öztürk, D., & Tuncer Şakar, C. (2023, November 1–3). *Zaman pencereli çok amaçlı takım oryantiring problemi için popülasyon temelli yaklaşım [A population-based approach for the multi-objective team orienteering problem with time windows]*. Paper presented at the 42nd National Congress of Operations Research and Industrial Engineering — YAEM 2023, Gaziantep University, Gaziantep, Türkiye.

Koç, A., Tezcaner Öztürk, D., & Tuncer Şakar, C. (2025, June 25–27). *Zaman pencereli ve kapasiteli araç rotalama problemleri için çok amaçlı evrimsel bir yaklaşım [A multi-objective evolutionary approach for vehicle routing problems with time windows and capacity constraints]*. Paper accepted for presentation at the 44th National Congress of Operations Research and Industrial Engineering — YAEM 2025, Gazi Üniversity, Ankara, Türkiye.

Koç, A., Tezcaner Öztürk, D., & Tuncer Şakar, C. (2026, June 29–July 1). *Zaman pencereli ve kapasite kısıtlı çok amaçlı araç rotalama problemi için pekiştirmeli öğrenme destekli yeni bir genetik algoritma* [A new reinforcement learning-assisted genetic algorithm for the multi-objective vehicle routing problem with time windows and capacity constraints]. Research Career Stage presentation accepted for the 45th National Congress of Operations Research and Industrial Engineering — YAEM 2026, Istanbul Technical University, İstanbul, Türkiye.

INTERNSHIP EXPERIENCE

Jun 2012 - Jul 2012	**Short-term Internship**, Directorate General of Productivity | *Ankara, Turkey*
Jun 2011 - Jul 2011	**Purchasing Internship**, Anadolu Birlik Holding Konya Şeker, Procurement Department | *Konya, Turkey*

ADMINISTRATIVE EXPERIENCE AND SERVICE

- TED University: Final examination scheduling for all faculties in fall, spring, and summer terms, Fall 2016 – Spring 2022.
- Volunteer organization member, 13th Annual Conference of the ENBIS (European Network for Business and Industrial Statistics), Ankara, Turkey, 15-19 September 2013.
- Volunteer internship at Hacettepe University Hospitals, Purchasing Department, August 2012; observed billing process errors from a system engineering perspective.

TECHNICAL SKILLS

PYTHON |LINDO | CPLEX | MATLAB | GAMS | CPN Tools | ARENA | Minitab

FOREIGN LANGUAGE EXAM (ÖSYM)

2019 Higher Education Institutions Foreign Language Test (YÖKDİL) Score: 86.25

PERSONAL INFORMATION

Date of Birth: 7 May 1990 | **Place of Birth:** Karaman, Turkey