Applied Quantitative Logistics

Intro and Course overview

Majid Sohrabi

National Research University Higher School of Economics

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Contacts

▶ **Majid Sohrabi**

- **Lecturer**, School of Data Analysis and Artificial Intelligence

- **Lecturer**, International College of Economics and Finance

- **Junior Research Fellow**, Laboratory for Models and Methods of Computational Pragmatics

Repository with course material

https://github.com/Majid-Sohrabi/2026_AQL

Course content

▶ Theory

   – Combinatorial & Supply Chain Optimization problems

   – Discrete & Continuous optimizations (single-objective problems)

   – Genetic Engineering Algorithm (GEA)

   – Genetic Speciation Algorithm with Interplay Among Species (GSAIS)

   – Other state-of-the-art metaheuristic approaches

▶ Practice

   – Python (or MATLAB) programming languages

   – Data Analysis

   – Implementation of mathematically formulated of problem statement

   – Implementation of the algorithms

Overview

▶ Elective course for year 1

▶ Master's Program "Data Science"

▶ Duration: 2nd half of the academic year (modules 3 and 4)

▶ Language: English

▶ Format: Offline (Lectures and Seminars)

Scoring System

▶ **Homework**: Each 1-2 weeks (total - 20%)

▶ **Paper review 1** module 3 (total - 15%)

▶ **Paper review 2** module 4 (total - 15%)

▶ Students **intermediate project presentation** in the 3rd module (5%)

▶ **Final submission of the project** by the end of the 4th module (45%)

The formula

Final grade = 0.2 · Homework + 0.15 · Paper review + 0.15 · Paper review + 0.05 · Intermediate report + 0.45 · Project

0 ≤ Homework ≤ 10

0 ≤ Paper review ≤ 10

0 ≤ Intermediate report ≤ 10

0 ≤ Project ≤ 10

Rounding to the closest integer

Homework

▶ A small set of tasks in 1-2 weeks (jupyter notebooks)

▶ Solve tasks to earn points

▶ Deadline: 1-2 weeks per homework

▶ Homework grade $= 10 \cdot \min\left(1, \frac{\sum \text{points}}{\text{total}}\right)$

▶ **Plagiarism matters!!!**

▶ **In case of AI detected, the control element will receive 0.**

- No retake is allowed for homework.

Paper review

- ▶ Choose a paper in related domain

- ▶ Prepare a presentation

- ▶ Present the paper at the end of each module

- ▶ Paper selection should be:

  - Recent work (> 2020)

  - Highly qualified journals (Q1/Q2)

- ▶ **Please discuss your choice with me**

- No retake is allowed for missing paper review.

Final Project

▶ The project is:

- Implementation of some techniques or study from an advanced paper

- Teams up to 2 people are OK (roles of all members of a team should be clear and significant)

▶ You can find something that interests you by yourself

Or:

▶ I'll provide some suggestions later

▶ **Please discuss your choice with me**

Note: Intermediate report is a must to be qualified for final project defense.

Thank you!