TEACHING MODULE Announcement

PhD in Computational and Quantitative Biology

Università degli Studi di Napoli Federico II

Module Title: Operational Research: Mathematical Modelling, Methods and Software Tools for Optimization Problems

Lecturer: Prof. Adriano Masone

Università degli Studi di Napoli Federico II
Department of Electrical Engineering and Information Technology
adriano.masone@unina.it
Telephone: +0817685859

CV: Adriano Masone is an Assistant Professor at the Department of Electrical Engineering and Information Technology of the University of Naples Federico II. He obtained his Ph. D. in Information Technology and Electrical Engineering in 2020 at the University of Naples Federico II. In 2018–2019, he was a Visiting Scholar at the Robert H. Smith School of Business of the University of Maryland, Maryland, USA. His areas of research include exact and heuristic solution methods for complex combinatorial and network optimization problems with application to healthcare, transportation and logistics.

Dates and Locations (rooms are in ed. 3A, floor I, via Claudio 21, Napoli)

Lecture	Date	Room	Time	Topics
1	14/09/22	Meeting room IV floor	10:30-12:30	Model building in mathematical programming
2	21/09/22	Meeting room IV floor	10:30-12:30	Discrete and graph optimization
3	28/09/22	Softel I floor	10:30-12:30	Optimization solvers: Fico-Xpress
4	05/10/22	Softel I floor	10:30-12:30	Optimization solvers: Gurobi
5	12/10/22	Softel I floor	10:30-12:30	Advanced optimization methods
	TBD		TBD	Assessment test

TEACHING MODULE Announcement

Content

I Lesson

Operations Research applications and relations with other disciplines. Model building in mathematical programming: data, variables, constraints, objective functions, decision-makers.

II Lesson

Discrete and graph optimization. Binary, pure, and mixed-integer linear optimization formulations. Relaxations, branch-and-bound and branch-and-cut.

III lesson

Introduction to the use of the optimization software FICO-Xpress. Modelling and solving a decision problem using FICO-Xpress.

IV Lesson

Introduction to the use of the optimization software Gurobi. Modelling and solving a decision problem using Gurobi. Branch-and-cut implementation with Gurobi.

V Lesson

Applications of advanced solution methods to real problems arising in different application fields.

ECTS Credits: 4

Notes

Participants to the Module are requested to e-mail to prof. Adriano Masone the following: Student name, name of the PhD course and cycle.

Info: **Prof. Adriano Masone** - tel. 081 7685859 – adriano.masone@unina.it