Introduction to Operations Research

Basics of Operations Research with Maple
2 hours a week
Thursday 14.15 – 15.45, RZ/01.03

The content, the benefits:
This subject is a short introduction to Operational Research Method that are mostly optimization methods in Economy.
The students can get not only an overview of the basic methods in this field, but even a baseline to understand (deeply) the basics of modeling in Economics. The definitions, the meanings of representation,- mathematical model,- feasible solutions of a problem; evaluation of a solution, etc.
The students will be able to calculate some algorithms alone or with Maple, or check their handy calculation with the available Maple procedures.

The topics:

1) Linear programming normal problems,
2) Linear programing modified normal problems
3) Parametric Linear Programming
4) Hyperbolic Linear Programming
5) Integer Linear Programming
6) Multiobjective Linear Programming
7) LP Sensitivity Analysis,
8) Transportation problem
9) CPM Methodology of Project Planning
10) Two-person zero-sum game theory

Why Maple?
There is an ongoing Project TÁMOP …. where the Teacher takes part. There has born several brand new Maple procedures to avoid handy calculations of the algorithms used at this field. These are not user programs, solving the whole problems without having known the details of the algorithms, but small special procedures - just the required ones – to avoid tiring, boring handy calculations and miscalculation. This way even a longer, more difficult calculation can be quick and enjoyable!

The style:
The teacher is an elderly (but fresh, update) Hungarian woman with 20 year experience in this fields - not only with Hungarian students, but with Turkish students (with Erasmus Exchange in Hungary), and with Indian students (in India!).
The presentation will be interactive, in spite mathematically correct but with small examples, stories from the real life. You can follow, ask, tell new ideas for the problems You will faced to. (As there will take part about only 10 students.) After the theoretical part there will be the "pure" algorithm shown for some simple problems, then You will get homework to apply the algorithm alone at home. At the next lesson there will be the solution of the homework problem checked together.

ECTS: 6
Anrechenbar in Angewandte VWL (Modulgruppe Vertiefung, Bachelor EES)