UNIVERSITY OF NEBRASKA AT OMAHA

MATH/CSCI 4300/8306 Deterministic Operations Research Models

MW 7:00-8:15 pm | On-Campus | Dr. Betty Love

Prerequisite: MATH 2050 with a C- or better or permission of instructor.

Operations research is a scientific approach to decision making that seeks to best design and operate a system, usually under conditions requiring the allocation of scarce resources. Operations research saves lives, saves money, and solves problems. Operations research models are used daily to **optimize** systems from several industries including:

- Logistics, transportation, and supply chain
- Financial systems
- Manufacturing
- Health care, medicine, and public health
- Oil, chemical, and mining industries
- Food and energy systems
- Agriculture
- Military and defense



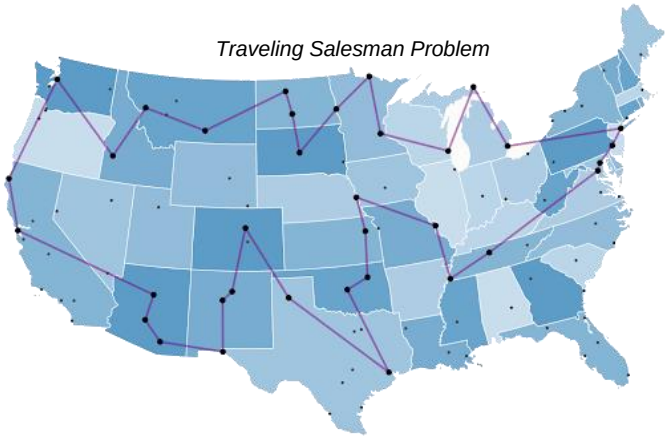


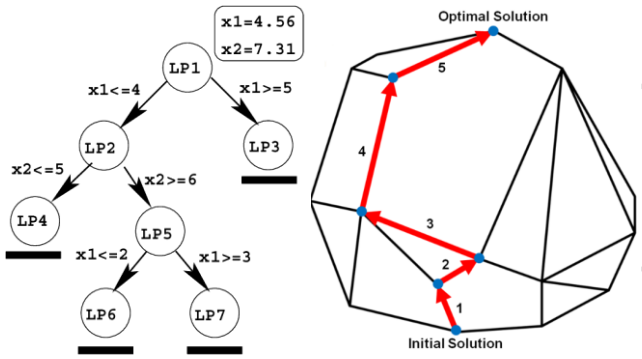

This course will study modeling and solution methods of some classical operations research models such as linear, integer, and network programming.

Optimization Modeling

Model and solve complex systems using commercial and open-source software (e.g. CPLEX, Gurobi, COIN-OR, etc.)

- Blending and production process problems
- Inventory and multi-period decision problems
- Transportation and transshipment problems
- Traveling salesman and vehicle routing problems
- Knapsack and multiple knapsack problems
- Assignment and matching problems
- Covering, node packing, and bin packing problems
- Facility location, fixed charge, and network problems





Solution Methods

The simplex method for linear programming

- Understand the mechanisms and theory of the simplex method to solve linear programs
- Evaluate the sensitivity of linear programs
- Understand and apply duality theory to solve linear programs

The branch and bound algorithm for integer programming

Do you want to learn the impact of operations research? Visit https://youtu.be/9-MITCoka-Q

For More Information:
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