USEEN3 - Operations Research

Mis à jour le 22-10-2020

Code : USEEN3

Unité spécifique de type cours

4 crédits

Responsabilité nationale : EPN05 - Informatique / Safia KEDAD SIDHOUM

Présentation

Prérequis

Basic knowledge of data structures and algorithms.

Objectifs pédagogiques

The course is an introduction to operations research tools for network applications. Emphasis will be on model formulations, linear and integer linear programming with the main objective of solving practical applications. The course will also provide an integrated view of algorithms and applications of key network optimization problems including the shortest path problem, the maximum flow problem, the minimum cost flow problem and the minimum spanning tree problem.

Programme

Contenu

Methodological tools:

- Modeling combinatorial optimization problems
- Linear programming
- Integer linear programming
- Shortest path algorithms
- Minimum spanning tree algorithms
- Network flow algorithms

Applications:

- Routing and traffic
- Network design
- Network connectivity and reliability
- Energy consumption

Modalités de validation

- Projet(s)
- Examen final

Description des modalités de validation

Mini-projects and final exam.

Bibliographie

Titre	Auteur(s)
Linear Programming	Vasek Chvatal
Network flows	Ravindra K. Ahuja, Thomas L. Magnanti, and James B. Orlin
Integer and Combinatorial Optimization	Laurence Wolsey