DATA SCIENCETECH INSTITUTE

Applied MSc in Data Science & Artificial Intelligence
Applied MSc in Data Engineering

"Continuous Optimization J.BLUM-D.AUROUX"

Volume of classes hours: 25 hrs *(+ some personal work expected)*

Course Summary:
- Introduction to optimization
- Optimality conditions (derivatives of multivariable functions, convexity, optimality conditions for unconstrained optimization)
- Existence and uniqueness of a minimum
- Lagrange multipliers for constrained optimization (equality constraints, inequality constraints, convex case with Kuhn-Tucker theorem, saddle-points)
- Optimization algorithms (unconstrained: gradient with fixed/optimal step, conjugate gradient; constrained: gradient with projection, Uzawa, ...)

Course Objectives:
- Give the theoretical basis for continuous optimization in finite dimension
- Introduce the main algorithms to perform constrained and unconstrained optimization

Theoretical background used:
- Differential calculus
- Functions of several variables

Technologies Used:
- Scilab

Course evaluation:
- Written exam