

Intitulé du cours

Course title – Intitulé du cours	Advanced Optimization
Level / Semester – Niveau / semestre	M2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Edouard Pauwels
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	15h
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	

Teaching staff contacts – Coordonnées de l'équipe pédagogique :

edouard.pauwels@tse-fr.eu

Course Objectives – Objectifs du cours :

The topic for 2023/2024 will be “Introduction to nonsmooth optimization”.

The course will cover elements of nonsmooth convex optimization: elements of convex analysis and algorithms which allow to tackle the problem of minimizing convex functions which are not necessarily differentiable. Topics to be covered include: directional derivatives and subgradients, Legendre conjugacy, constrained optimization and duality, linear programming, proximity operators. We shall also describe some algorithms based on these concepts as well as elements of qualitative and quantitative analysis for these algorithms.

Prerequisites – Pré requis :

The M1 courses on Optimization and Advanced Analysis

Practical information about the sessions – Modalités pratiques de gestion du cours :

Grading system – Modalités d'évaluation : Final exam

Bibliography/references – Bibliographie/références :

Session planning – Planification des séances

Distance learning – Enseignement à distance :

Distance learning can be provided when necessary by implementing:

- *Interactive virtual classrooms*
- *Recorded lectures (videos)*
- *MCQ tests and other online exercises / assignments*
- *Remote (online) tutorials (classes)*
- *Chatrooms*

En cas de nécessité, un enseignement à distance sera assuré en mobilisant:

- *Classe en ligne interactive*
- *Vidéo enregistrée de la présentation du matériel pédagogique*
- *QCM et exercices en ligne*
- *TP/TD à distance*
- *Forum...*