

Optimal transport : theory and applications

Course title – Intitulé du cours	Optimal transport : theory and applications
Level / Semester – Niveau / semestre	M1/M2 – Semester 2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Adrien Blanchet
Other teacher(s) – Autre(s) enseignant(s)	
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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 :

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Course Objectives – Objectifs du cours :

The aim of this course is to introduce the theory of optimal transport and to show some of its applications, particularly in economics.

Chapter 1: Kantorovich duality

Chapter 2: Brenier existence result

Chapter 3: displacement convexity

Chapter 4: applications in economics

Prerequisites – Pré requis :

Measure theory, integration, probability, functional analysis

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

Grading system - Modalités d'évaluation :

Exam

Bibliography/references - Bibliographie/références :

- * Villani, C. (2021). *Topics in optimal transportation* (Vol. 58). American Mathematical Soc..
- * Santambrogio, F. (2015). Optimal transport for applied mathematicians. *Birkäuser, NY*, 55(58-63), 94.
- * Galichon, A. (2018). *Optimal transport methods in economics*. Princeton University Press.
- * Blanchet, A., Mossay, P., & Santambrogio, F. (2016). Existence and uniqueness of equilibrium for a spatial model of social interactions. *International Economic Review*, 57(1), 31-60.
- * Blanchet, A., & Carlier, G. (2016). Optimal transport and Cournot-Nash equilibria. *Mathematics of Operations Research*, 41(1), 125-145.

Session planning - Planification des séances

Distance learning - Enseignement à distance :

Distance learning can be provided when necessary by implementing:

- *Interactive virtual classrooms*

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

- *Classe en ligne interactive*