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Nota di bibliografia Includes bibliographical references.

Nota di contenuto 1 Lecture 1: Preliminary notions and the Monge problem -- 2 Lecture 2: The Kantorovich problem -- 3 Lecture 3: The Kantorovich - Rubinstein duality -- 4 Lecture 4: Necessary and sufficient optimality conditions -- 5 Lecture 5: Existence of optimal maps and applications -- 6 Lecture 6: A proof of the Isoperimetric inequality and stability in Optimal Transport -- 7 Lecture 7: The Monge-Ampére equation and Optimal Transport on Riemannian manifolds -- 8 Lecture 8: The metric side of Optimal Transport -- 9 Lecture 9: Analysis on metric spaces and the dynamic formulation of Optimal Transport -- 10 Lecture 10: Wasserstein geodesics, nonbranching and curvature -- 11 Lecture 11: Gradient flows: an introduction -- 12 Lecture 12: Gradient flows: the Brézis-Komura theorem -- 13 Lecture 13: Examples of gradient flows in PDEs -- 14 Lecture 14: Gradient flows: the EDE and EDI formulations -- 15 Lecture 15: Semicontinuity and convexity of energies in the Wasserstein space -- 16 Lecture 16: The Continuity Equation and the Hopf-Lax semigroup -- 17 Lecture 17: The Benamou-Brenier formula

| Sommario/riassunto | This textbook is addressed to PhD or senior undergraduate students in mathematics, with interests in analysis, calculus of variations, probability and optimal transport. It originated from the teaching experience of the first author in the Scuola Normale Superiore, where a course on optimal transport and its applications has been given many times during the last 20 years. The topics and the tools were chosen at a sufficiently general and advanced level so that the student or scholar interested in a more specific theme would gain from the book the necessary background to explore it. After a large and detailed introduction to classical theory, more specific attention is devoted to applications to geometric and functional inequalities and to partial differential equations. |