

MATH 1839 Background Books and Further Reading:

Optimal Transportation:

- * Villani. *Topics in Optimal Transportation*. AMS, 2003.
- Rachev and Rüschendorf. *Mass transportation problems. Theory and Applications*. Springer-Verlag, 1998. (statistics).
- Beckmann and Puu. *Spatial Economics: Density, Potential, and Flow*, North-Holland / Elsevier 1985. (economics)

Measure Theory and Integration:

- Royden. *Real Analysis*. 3rd ed. McMillan Publishing Co., 1988, 1963.
- Rudin. *Real and Complex Analysis*. 3rd ed. McGraw-Hill 1987, 1966.
- Lieb and Loss. *Analysis*. American Mathematical Society 1997.

Functional Analysis:

- Reed and Simon. *Functional Analysis* (volume 1 of Methods of Modern Mathematical Physics; Revised and Enlarged Edition). Academic Press 1980.
- Rudin. *Functional Analysis*. McGraw-Hill 1973.
- Adams. *Sobolev Spaces*. Academic Press 1975. (for Legendre transforms!)

Partial Differential Equations:

- * Evans. *Partial Differential Equations*. American Math Society 1998.
- Gutiérrez. "The Monge-Ampère Equation". Birkhauser, 2001.

Linear Programming:

- Brickman. *Mathematical Introduction to Linear Programming and Game Theory*. Springer-Verlag 1989. (elementary introduction)
- * Anderson and Nash. *Linear Programming in Infinite-Dimensional Spaces. Theory and applications*. Wiley 1987. (especially chapter on transportation)

Convex Analysis:

- van Tiel. *Convex analysis. An Introductory Text*. Wiley 1984
- Ekeland and Teman. *Convex analysis and variational problems*. SIAM 1999.
- Rockafellar. *Convex Analysis*. Princeton University Press 1972.
- Schneider. *Convex bodies: the Brunn-Minkowski Theory* Cambridge University Press 1993.

Geometric Analysis:

Morgan. *Geometric Measure Theory. A Beginner's Guide.* Academic Press 1995.

* Evans and Gariepy. *Measure Theory and Fine Properties of Functions.* CRC Press 1992.

Giusti. *Minimal Surfaces and Functions of Bounded Variation.* Birkhäuser 1984.

Federer. *Geometric Measure Theory.* Springer, 1969.

Riemannian Geometry:

Milnor. *Morse Theory.* Princeton University Press 1963, 1969.

Gallot, Hulin and Lafontaine. *Riemannian Geometry.* Springer-Verlag 1993.

Complex Analysis:

Krantz. *Complex analysis : the geometric viewpoint.* Washington, 1990.

Ahlfors. *Complex analysis : an introduction to the theory of analytic functions of one complex variable.* 3d ed. McGraw-Hill, 1979.