Lipschitz mappings — I

On pages **57** and **75** of the notes we mention the concept of a **Lipschitz condition**, which is meaningful for mappings of arbitrary metric spaces and lies between the notions of uniform continuity and isometry. Such conditions are important because they suffice to prove strong existence and uniqueness conditions for solutions to ordinary differential equations, but they also arise in several other contexts. A few basic facts about functions satisfying such conditions (**Lipschitz functions**) appear the following material extracted from course notes for Mathematics **205C**

http://math.ucr.edu/~res/math205A-2014/lipschitz2.pdf

and also the following **Wikipedia** reference:

http://en.wikipedia.org/wiki/Lipschitz_continuity

More detailed discussions of Lipschitz functions and related topics involving metric spaces are given in the online notes

http://www.math.jyu.fi/research/reports/rep100.pdf

and the following advanced texts:

> **D. Burago**, **Y. Burago and S. Ivanov.** A Course in Metric Geometry: Graduate Studies in Mathematics Vol. 33. *American Mathematical Society, Providence, RI,* 2001.

> **J. Heinonen.** Lectures on Analysis on Metric Spaces (Universitext). *Springer – Verlag, New York,* 2001.