

PDE - Math 559

T. TORO

In this course we will focus in two main subjects. Initially will discuss various regularity results for weak solutions to elliptic equations of divergence form. In particular we will describe in detail DeGiorgi, Nash and Moser's work in this area. In the second half of the course we will address boundary regularity questions for solutions to elliptic equations of divergence form in rough domains.

We will use materials from a few books and also from a number of papers, among others:

- D. Gilbarg & N. S. Trudinger, *Elliptic Partial Differential Equations of Second Order*, Springer-Verlag, 1983.
- Q. Han & F.H. Lin, *Elliptic Partial Differential Equations*, Courant Lecture Notes, AMS, 2011.
- C. Kenig, *Harmonic analysis techniques for second order elliptic boundary value problems*, CBMS Regional Conf. Series in Math., **83**, Amer. Math. Soc., Providence, RI, 1994.
- C.B. Morrey, Multiple integral problems in the calculus of variations and related topics, *Annali della Scuola Normale Superiore di Pisa*, **14**, 1960, 1-61.

Prerequisites: Math 557 & Math 558.