

# MA633 Partial Differential Equations II

Spring 2012

Instructor P. D. Hislop  
Office: 753 POT  
257-5637 or hislop@ms.uky.edu

Text: L. C. Evans, *Partial Differential Equations*, second edition, Amer. Math. Soc., 2010.

Class Meetings: MWF 10:00–10:50 AM CB 345

Office Hours: MWF 4-5, and by appointment

COURSE MATERIAL AND INFORMATION [www.ms.uky.edu/~hislop](http://www.ms.uky.edu/~hislop)

## Grading Policy

We will have one midterm exam in class (100 points), one final (100 points), and occasional homework (100 points) giving 300 points total. Homework will be posted on the course web page: <http://www.ms.uky.edu/hislop/> and you will have at least 10 days for each assignment. We will cover chapter 5, Sobolev Spaces, mostly sections 5.1–5.7, and chapter 6, Second-order elliptic equations.

Item	Date	Total Points
Homework		100 points
Mid-term Exam (approximately 9 March)	in class	100 points
Final Exam: 30 April 1:00-3:00 PM		100
TOTAL		300

The minimum cut-offs for letter grades are: A 270-300; B 240-269; C less than 240. If your final total of all scores is within one of these intervals you are guaranteed to receive the corresponding letter grade or higher.

## Course Content

This course is a continuation of MA 533. We will study local Sobolev spaces, global Sobolev spaces via the Fourier transform, and Sobolev embedding theorems. We'll do various inequalities such as the Poincaré inequality and the We will then apply this material to study the existence of weak solutions to elliptic PDEs mostly using the Lax-Milgram method. We will study the regularity of these solutions. We will review material from functional analysis as needed. This is summarized in Appendix D.

There are other good books that I recommend:

Fritz John: *Partial differential equations*. Springer, 1982.

Gerald B. Folland: *Introduction to partial differential equations*. Princeton University Press, 1995.

## Special Dates

16 January Martin Luther King, Jr. Day - No classes  
12–16 March Spring Break - no classes  
27 April Last Class