

## 645. Partial Differential Equations

*Spring 2012 Syllabus*

**Professor:** Robert Strain (strain at math.upenn.edu)

**Course Web Page:** <http://www.math.upenn.edu/~strain/12ma645/>

**Class schedule:** TH @ 12:00 - 1:30PM in DRL 4C8.

**First class, last class:** January 12, April 24.

**Brief course description:** Continuation of Math 644.

**Topics to be covered (subject to change):**

- Sobolev spaces, and other useful exotic function spaces
- Second-Order Elliptic, Parabolic & Hyperbolic Equations
- Littlewood-Paley theory and Harmonic Analysis techniques in Partial Differential equations
- Introduction to incompressible fluid dynamics
- Introduction Kinetic theory

**Homework:** Weekly, posted on the course website. Collaboration between students is encouraged, but you must write your own solutions, understand them and give credit to your collaborators. (In other words, put a list of the students with whom you collaborated on your homework.)

**Exams:** There will be no exams.

**Textbook:** L.C. Evans, *Partial differential equations*, AMS, Graduate Series in Mathematics, Vol 19 (Required textbook). *This text will also be on reserve at the Math/Physics/Astronomy Library in DRL.*

Other references will be provided throughout the course.