

# Math 425 Course Announcement

**Instructor:** Vedran Sohinger

**Class time:** Tuesday and Thursday, 12-1:30.

**Classroom:** 4E9 David Rittenhouse Laboratory.

**Instructor's office:** 3N4B David Rittenhouse Laboratory.

**Instructor's email:** vedran@math.upenn.edu

**Instructor's website:** <http://www.math.upenn.edu/~vedranso>

**Office hours:** To be announced.

**Prerequisites:** Math 241 or permission of instructor.

**Grading:** Weekly problem sets (30%), Two in-class midterms (15% each), In-class final exam (40%).

**Course Description:**

This will be an introductory course on Partial Differential Equations. We plan to study the following fundamental PDEs: the transport equation, Laplace's equation, the heat equation, the wave equation and the Schrödinger equation. In the course of the semester, we will develop the necessary tools from Fourier analysis which will help us study these PDEs.

The main emphasis of the class will be on general methods which one can apply to study a PDE even when one doesn't know the explicit formula for its solution. In this way, we will be able to deduce key qualitative observations on the solutions. In addition, we will also develop several methods to find explicit solutions by which we can demonstrate the above observations. Our analysis will rely on the use of Calculus, Complex Analysis and Linear Algebra. The methods of Fourier series and Fourier transform will be presented in a self-contained way.

The textbook for the class will be: "Walter Strauss: Partial Differential Equations, an Introduction", the second edition, published by John Wiley Inc. It is available from the campus bookstore. Another textbook which is not required, but is put on reserve in the Math library is "Sandro Salsa: Partial Differential Equations in Action", published by Springer Universitext.

This class is cross-listed as Math 425 and as AMCS 525.