

**Math 110.742** Topics in partial differential equations  
Spring 2017 Course Syllabus

Dr Benjamin Dodson

Time: Monday and Wednesday 1 : 30 – 2 : 45, location: Krieger 214

bdodson4@jhu.edu

214 Krieger Hall

410-516-8179

Office Hours: By appointment

**Text:** We will be covering the topic of nonlinear Schrodinger equations. I will hand out lecture notes for the lectures that I will be giving. Here are some texts the interested student may wish to consult for more information.

1. Nonlinear Dispersive Equations, Terence Tao
2. Global Solutions of Nonlinear Schrodinger Equations, Jean Bourgain
3. The Nonlinear Schrodinger Equation, Catherine and Pierre Sulem
4. Evolution Equations – Clay Mathematics Proceedings, Volume 17
5. Semilinear Schrodinger Equations, Thierry Cazenave

**Topics:** We will be covering some of the proofs of scattering for nonlinear Schrodinger problems. Here is a rough outline of the topics that will be covered in the course.

1. Strichartz estimates
2. Morawetz estimates
3. Concentration compactness arguments
4. The double Duhamel method
5. Frequency localized Morawetz estimates

**Grading:** The course grade will be based on the homework.