Spring 2024. MATH5099. Section 007.

Partial Differential Equations II

Instructor: Luan Thach Hoang
Office: MA 208. Phone: (806) 834-3060. Fax: (806) 742-1112
Email address: *luan.hoang@ttu.edu*
Homepage: *http://www.math.ttu.edu/~lhoang/*
Office hours: MWF 10am - 11am

Classroom and Time: MA 115, MWF 1:00 pm - 1:50 pm.

Course website: *http://www.math.ttu.edu/~lhoang/2024Spr-M5099/*

Text: *Partial Differential Equations*, 2nd edition, by Lawrence C. Evans, published by American Mathematical Society.

Course Description: An introduction to modern theory of partial differential equations (PDE).

- Basic theories of Sobolev spaces which are essential to understanding PDEs.
- Second-order elliptic, parabolic and hyperbolic equations: Weak solutions, Existence, Regularity.
- Various techniques are used to analyze these equations and properties of their solutions.

Course Outline:

- Chapter 5: Sobolev Spaces
- Chapter 6: Second-Order Elliptic Equations
- Chapter 7: Linear Evolution Equations
- Chapter 8: Calculus of Variations

Content: Sobolev spaces: weak derivatives, basic inequalities and embedding theorems. Second order elliptic, parabolic and hyperbolic equations: weak solutions, existence, uniqueness and regularity. Calculus of variations: existence and regularity of minimizers. Many more on properties of the solutions.

Handouts:

- Syllabus