

Mini-course on Elliptic Partial Differential Equations
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Essential Syllabus.

Lecture 1 (90min). Introduction and motivations. Examples: Laplace Equation, Poisson Equation. Superposition Principle. Separation of variables.

Lecture 2 (90min). Maximum principle (weak form). harmonic functions. Definition and main properties. The Mean Value Theorem. Maximum principle (strong form).

Lecture 3 (90min). More exercises on the Separation of Variables method.

Keywords. Elliptic PDEs, Harmonic functions, Fourier Series, Maximum principle.

Project. Based on the Separation of Variable method and on theorems seen during the mini-course.

Exercises. Exercises may be given during the course (optional).

Course material. Essential lecture notes will be provided.

Reference books Partial Differential Equations, 2nd ed., AMS, Lawrence C. Evans
<https://tinyurl.com/y42v1j9z>