The Maximum Principle for Elliptic Equations

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Course requirements: the student is supposed to know: basic topology and basic geometry.

Examination and grading:

SSD: MAT/05

Aim:

Course contents:
Some simple cases: linear and harmonic functions.
General linear uniformly elliptic operators on bounded domains. Applications to a priori estimates.
The Maximum Principle and the principal eigenvalue. The Rayleigh and the min-max formula.
Degenerate elliptic operators on bounded and domains.
Degenerate elliptic operators on unbounded domains.
The Maximum Principle and different notions of weak solutions of fully nonlinear elliptic equations.

Reference:
Some basic reference books and papers:

4. L. Caffarelli and X. Cabré, Fully Nonlinear Elliptic Equations, Colloquium Publications, Vo. 43, AMS 1995