

# مباحثی در نظریه معادلات دیفرانسیل پاره‌ای (موضوع درس: معادلات دیفرانسیل بیضوی غیرخطی)

شماره درس ۲۲۴۰۲

زمان کلاس: شنبه دوشنبه ۸:۳۰-۱۰:۳۰  
مدرسین: مرتضی فتوحی، لیلا سلیمی

## سرفصل

- 1- Definition of nonlinear elliptic operators, Examples and applications, Viscosity solutions, Existence and uniqueness, Perron's method.
- 2- Maximum principle, ABP estimate, Harnack inequality,  $C^\alpha$  regularity.
- 3- Jensen's approximate solutions,  $C^{1,\alpha}$  regularity.
- 4- Evans-Krylov theorem,  $W^{2,p}$  regularity, Holder regularity, BMO estimate.
- 5- Non-convex operators.

## مراجع:

- 1- L. A. CAFFARELLI, X. CABRE, *Fully nonlinear elliptic Equations*, Amer. Math. Soc., **43** (1995).
- 2- L. A. CAFFARELLI, Q. HUANG, Estimates in the generalized Campanato-John-Nirenberg spaces for fully nonlinear elliptic equations, *Duke Math J.*, **118** (2003).
- 3- M. G. CRANDALL, H. ISHII AND P. L. LIONS, User's guide to viscosity solutions of second order partial differential equations, *Bull. Amer. Math. Soc.*, **27**, 1 (1992), 1–67.
- 4- H. ISHII, P. L. LIONS, Viscosity solutions of fully nonlinear second-order elliptic partial differential equations, *J. Differential Equations*, **83**, 1 (1990), 26–78.