

Introduction to non linear elliptic PDEs

**ECTS** : 6

**Volume horaire** : 37.5

**Description du contenu de l'enseignement :**

- Existence of weak solutions of linear and nonlinear elliptic PDEs by variational methods
- Regularity of weak solutions to linear and nonlinear elliptic PDEs
- Maximum principles and applications
- Brouwer degree, Leray-Schauder degree, fixed-point theorems
- Local and global bifurcation theory applied to nonlinear elliptic PDEs

**Compétence à acquérir :**

Nonlinear elliptic PDEs

**Bibliographie, lectures recommandées :**

- L.C. Evans, Partial Differential equations (Graduate Studies in Mathematics 19, AMS).
- L. Nirenberg, Topics in Nonlinear Functional Analysis (Courant Lecture Notes Series 6, AMS).

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