



**UNIVERSIDADE FEDERAL DE SANTA CATARINA
CENTRO DE CIÊNCIAS FÍSICAS E MATEMÁTICAS
PÓS-GRADUAÇÃO EM MATEMÁTICA PURA E APLICADA**

MTM510033 Partial Differential Equations

Pre-requisite: MTM510012 Distribution Theory and Sobolev spaces

Weekly lesson hours: 06h

Discipline syllabus: Second order linear elliptic PDE's: existence, uniqueness and regularity for weak and strong solutions; Harnack's inequality; principles of maximum; L_p estimates. Second-order quasi-linear elliptic PDE's: topological fixed point method; variational methods; mountain pass theorem.

BIBLIOGRAPHIC REFERENCES

Text book:

1. EVANS, Lawrence C.; Partial Differential Equations. AMS, 1998.
2. GILBARG, David; TRUDINGER, Neil S.; Elliptic Partial Differential Equations of Second Order. Springer, 2000.

COMPLEMENTARY BIBLIOGRAPHY

1. AGMON, S.; Lecture on Elliptic Boundary Value Problems. Van Nostrand-Reinhold, 1965.
2. AMBROSETTI, Antonio.; MALCHIODI, Andrea; Nonlinear Analysis and Semilinear Elliptic Problems. Cambridge University Press, 2007.
3. GIAQUINTA, M.; Multiple integrals in the Calculus of Variations and Nonlinear Elliptic Systems. Princeton University Press, 1983.
4. KESAVAN, S., Topics in functional analysis an applications, New York: Wiley, 1989.
5. LADYZHENSKAYA, Olga A.; URALTSEVA, N. N.; Linear and Quasilinear Elliptic Equations. Academic Press, 1968.
6. LIONS, Jacques L.; MAGENES, Enrico; Problèmes Aux Limites Non Homogènes et Applications, volume 1. Dunon, 1968.
7. NECAS, Jindrich. Les Méthodes Directes em Théorie de Équations Elliptiques. Masson ET, 1967.