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

MTM510018 Nonlinear Partial Differential Equations

Pre-requisite: MTM510012 Distribution Theory and Sobolev spaces

Weekly lesson hours: 06h

Discipline syllabus: To develop basic techniques for the study of the existence and uniqueness of solutions of problems associated to partial differential equations hyperbolic, parabolic and nonlinear elliptic.

BIBLIOGRAPHIC REFERENCES

Text book:

1. J. L. Lions, Quelques méthodes de résolution des problèmes aux limites non linéaires. Paris: Dunod, 1969.
2. L. Tartar, Topics in nonlinear analysis. Orsay, France: Université de Paris-Sud/Département de Mathématiques, 1978.

COMPLEMENTARY BIBLIOGRAPHY

1. H. Brezis, T. Casenave, Nonlinear evolution equations, Technical Report, 1994.
2. H. Brezis, Analyse Fonctionnelle, Théorie et applications, Masson, Paris, 1983.
3. L. C. Evans, Partial Differential Equations, Graduate Studies in Mathematics, V. 19, AMS, 1998.
4. S. Kesavan, Topics in functional analysis and applications, New York: Wiley, 1989.
5. V. Komornik, Exact controllability and Stabilization, J. Wiley-Masson, Paris, 1994.
6. C. P. Massarolo, Estabilização uniforme de soluções de equações diferenciais parciais de evolução. Dissertação de mestrado, UFSC (Março/2000).
7. L. A. Medeiros, Lições de equações diferenciais parciais. Rio de Janeiro: IM-UFRJ, 2001.
8. C. S. Morawetz, The decay of solutions of the exterior initial-boundary value problem for the wave equation, Comm. Pure Appl. Math. 14 (1961), 561-568.
9. W. A. Strauss, The energy method in nonlinear partial differential equations. Rio de Janeiro: IMPA, 1969.
10. R. Teman, Infinite-dimensional dynamical systems in mechanics and physics, Springer, 1997.

11. R. Teman, Navier-Stokes Equations: Theory and Numerical Analysis, American Mathematical Society, 2000.