



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

MTM510026 Infinite-Dimensional Attractors

Pre-requisite: MTM510012 Distribution Theory and Sobolev spaces; MTM510013 Theory of Semigroups and Applications in PDE or MTM510018 Nonlinear Partial Differential Equations.

Weekly lesson hours: 06h

Discipline syllabus: Existence of global attractor. Attractors for differential equations in spaces of infinite size. Dimension of the attractor. Regularization and approximation of attractors.

BIBLIOGRAPHIC REFERENCES

Text book:

1. R. Temam, Infinite-dimensional dynamical systems in mechanics and physics, Springer, 1997.

COMPLEMENTARY BIBLIOGRAPHY

1. P. Constantin, C. Foias, Navier-Stokes Equations, Chicago Lectures in Mathematics, The University of Chicago Press, 1988.
2. N. I. Karachalios, N. Yannacopoulos, Global existence and compact attractors for the discrete nonlinear Schrödinger equation, *Journal of Differential Equations* 217 (2005), 88-123.
3. O. Ladyzhenskaya, Attractors for Semigroups and Evolution Equations, Cambridge University Press, 1991.
4. M. Nakao, Global attractors for nonlinear wave equations with nonlinear dissipative terms, *Journal of Differential Equations* 227 (2006), 204-229.
5. J. C. Oliveira, J. M. Pereira, Global attractors for a class of nonlinear lattices, *Journal of Mathematical Analysis and Applications* 370 (2010), 726-739.
6. J. C. Robinson, Infinite-Dimensional Dynamical Systems: an introduction to Dissipative Parabolic PDEs and the Theory of Global Attractors, Cambridge University Press, 2001.
7. S. Zhou, Attractors for second-order lattice dynamical systems with damping, *Journal of Mathematical Physics* 43 (1) (2002), 452-465.