BIFURCATION THEORY

(2crds) - a.y. 2009/10

Contents and Calendar

Theory **(18hrs):**

Lect. 1,2	**Perturbation Methods**
Lect. 3,4	**Fundaments of Dynamical Systems & Bifurcation Theory**
Lect. 5	**Static Bifurcation Analysis**
Lect 6,7,8,9	**Dynamic Bifurcation Analysis**

Calendar**: December, 1,3,10,15,17,22 (Tue/Thu); time: 9-12**

Practice **(3 hrs):**

Performing calculations by the 'Mathematica' software

Calendar**: December,7 (Mon); time: 10-13**

Lecture notes **on: ing.univaq.it/webdisat *and* lnx.mathmodes.eu**

Further readings

- **Bifurcation Theory, Center Manifold & Normal Forms:**
  - Guckenheimer, J., Holmes, P., *Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields*, Springer, New York, 1983.
  - Wiggins,W., *Introduction to Applied Nonlinear Dynamical Systems and Chaos*, Springer, NewYork, 1996.
  - Troger, H., Steindl, A., *Nonlinear Stability and Bifurcation Theory*, Springer,Wien, New York, 1991.

- **Multiple Scale Method:**

  Nayfeh, A.H., Perturbation Methods, J. Wiley & Sons, New York, 1973.

- **Linear Stability Analysis:**

  Seyranian, A.P., Mailybaev, A.A., *Multiparameter Stability Theory with Mechanical Applications*, Series A, Vol. 13, World Scientific, Singapore, 2003.