COURSE ANNOUNCEMENT: MTH 480 (Winter 2014)

Systems of Ordinary Differential Equations (ODEs)

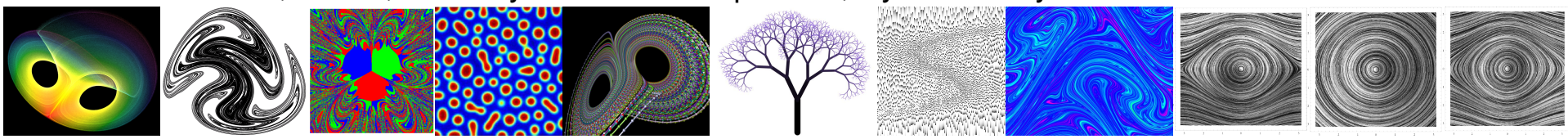
www.math.oregonstate.edu/~mpesz/480_W14

MWF 2:00-3:00pm, Instructor: M. PESZYNSKA

Class content:

- Theory: *Systems of first-order differential equations, phase portraits, linearization and the stability of equilibria, conservative and reversible systems, limit cycles and the Poincaré-Bendixson Theorem.*
- Applications: Mathematical models using system of ODEs for
  - mechanics and physics (pendulum, two-body problem)
  - circuits (electrical circuits, neurodynamics)
  - chemistry (systems of chemical reactions)
  - biology (population dynamics, infectious diseases)
- Additional topics: there will be a project on fractals, and a February RJ-special. Also, bifurcations and chaos.

PREREQUISITES: MTH 256 and MTH 341 or equivalent (or instructor approval).
TEXT: Hirsch, Smale, Devaney "Differential Equations, Dynamical Systems. Introduction to Chaos"



References to these images can be provided by contacting the Instructor. Better yet, come to class and learn how they arise from ODEs.