Class: MWF 11-12  
Instructor: J.D. Meiss  
Prerequisites: Give me a call, email or stop by and we can discuss it. 
Text: My Notes, see <http://amath.colorado.edu/faculty/jdm/7100/> 

Topics

Discrete Dynamics in one Dimension
- Bifurcations
- Period Doubling Cascades
- Renormalization

Fixed Points and Periodic Orbits
- Linearization and Stability
- Sinks and Hyperbolic Points
- Poincaré-Bendixson Theorem
- Stable Manifold Theorem

Bifurcations and Normal Forms
- Versal Unfoldings
- Saddle-Node, Period Doubling
- Pitchfork & Hopf Bifurcations

Hamiltonian Systems and Symplectic Maps
- Circle Maps and Arnold Tongues
- Action and Variational Principals
- Twist Maps and Aubry-Mather Theory
- Invariant Circles and Cantori
- Diffusion and Transport

Hyperbolic Sets and Strange Attractors
- Transitivity, Mixing, Ergodicity, Lyapunov Exponents
- Smale’s Horseshoe
- Anosov Maps and Cat Maps
- Fractals and Scaling