

Abstract Submitted  
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**Chaos Theory For Freshman: A Seminar with Laboratory Science**

**Credit** BRUCE N. MILLER, Texas Christian University — Seminars aimed specifically at freshman have become popular in private colleges in the last decade. Here I describe a seminar on chaos theory that, in addition to a regular discussion forum, meets weekly in a computer laboratory. The course roughly follows the development of nonlinear dynamics, starting with sensitive dependence and the butterfly effect through bifurcations and even a touch of KAM theory. Clear distinctions are drawn between dissipative and conservative dynamical systems. Examples are taken from astronomy, biology, mechanics, meteorology, and idealized fractals. The laboratory sessions follow the course of the readings and feature the seminal nonlinear maps that stimulated the development of the theory. In addition to technical issues, the concept of a scientific revolution, and the meaning and possibility of free will are contemplated from the standpoint of dynamical systems theory. At the end of the semester students make a presentation based on a topic they select and investigate. I will present an outline of the class activities and some examples of the student presentations.

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