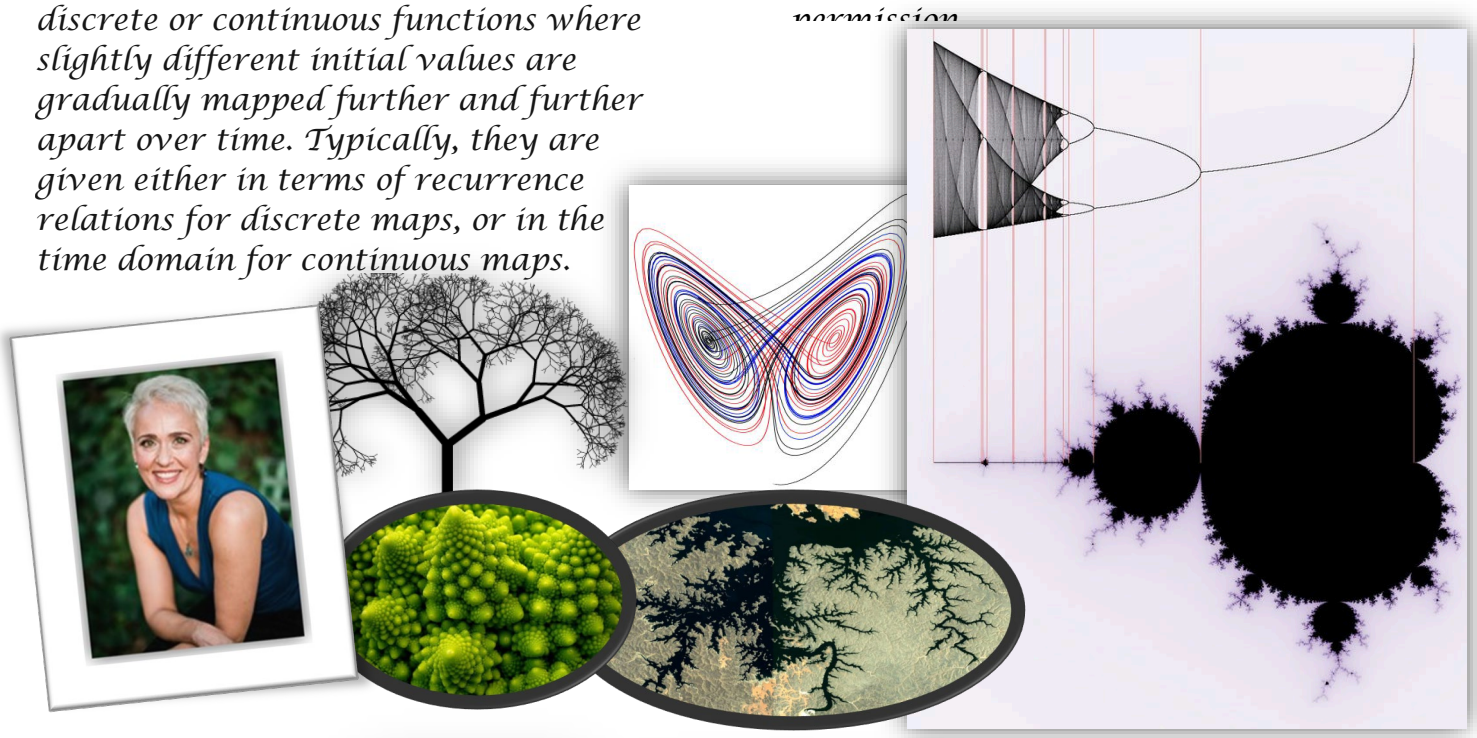
UNIVERSITY OF NEBRASKA AT OMAHA

MATH 8400: Dynamical Systems & Chaos

MW 4:00 PM – 5:15 PM | Fall 2022 | Dr. Dora Velcsov

Description: *Chaos theory is the study of systems that evolve from some initial conditions. A small perturbation in the initial setup of a chaotic system may lead to a drastically different behavior, a concept popularly referred to as the butterfly effect from the idea that the actions of a butterfly may dramatically alter the physical state of the rest of the world. Although the behavior of chaotic systems may seem scattered and random, chaotic systems are strictly defined to be deterministic, meaning that a particular set of initial conditions always evolves in the same way. Chaotic systems can be either discrete or continuous functions where slightly different initial values are gradually mapped further and further apart over time. Typically, they are given either in terms of recurrence relations for discrete maps, or in the time domain for continuous maps. Applications of chaos theory are widespread across biology and epidemiology, chemistry, physics, economics, and mathematics, among other fields. Often, systems with a large number of coupled variables exhibit chaotic behavior, including weather systems, epidemics, job markets, population dynamics, and celestial mechanics.*

Pre-requisites: *Permission from instructor. If you have a background that covers introduction to analysis, differential equations, linear algebra, and you are somewhat familiar with computer codes, it is easy to obtain permission.*



For More Information:

Dr. Dora | 402.554.3295 | dvelcsov@unomaha.edu

University of Nebraska Omaha