Dynamical Systems: Modeling

Department of Mathematics

Salt Lake Community College

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The study of multidimensional systems will be aided by the study of **linear algebra** in chapters 3 and 5.

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But, if all we care about is the temperature of the coffee, we can use a limited model called Newton's Law of Cooling, which incorporates the surrounding temperature to give an accurate description of the coffee's temperature.

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Note

We will only be studying ODE's in this class.

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- $\dfrac{d^2y}{dt^2} = f(t, y, y')$ is a second-order ODE with independent variable t and dependent variable y.
- $2\dfrac{d^2y}{dt^2} + y\dfrac{dy}{dt} + ty^2 = 0$ is a second-order ODE with independent variable t and dependent variable y.