1145-34-2105   **Becky Sanft*** (`bsanft@unca.edu`) and **Anne Walter**. *A Data-Driven Approach to Teaching Modeling with Differential Equations.* Preliminary report.

There is an ongoing paradigm shift in how science is practiced and taught, from a strong disciplinary focus to one of interdisciplinary approaches to address a question. One critical interface is that between mathematics and biology, where differential equations have often been used to develop mechanistic models of biological phenomena. In this talk we will describe case studies designed to actively engage students to use differential equations to model biological systems. Each case study is motivated by a biological question and then guides students through the steps of model formulation using differential equation models, parameter estimation, model validation, and analysis. A distinguishing feature of these materials is that each case study uses data to drive the model formulation and to estimate model parameters. These case studies help students see mathematical modeling as an iterative process that helps scientists understand complex systems, make predictions, generate causal explanations, and design new experiments. (Received September 24, 2018)