

# COLLOQUIUM

DEPARTMENT OF MATHEMATICS AND STATISTICS  
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## **Ecological Stoichiometry Meets Lotka-Volterra: A Data Based Mathematical Model**

### **Abstract**

In the broadest terms, Ecological Stoichiometry is the study of the intertwined relationships between the balance of energy, chemical elements, organisms and their interactions within ecosystems. Applying this to mathematical population models lets us explore how nutrient dynamics influence the interaction between organisms and their environments. In this talk, we'll review some of the history behind one of the most famous population models of all time, the Lotka-Volterra equations and construct a recently developed version that incorporates ideas from Ecological Stoichiometry. In addition, we'll explore some of the broader implications these ideas have in cancer modeling, plant-virus interactions and how rising atmospheric CO<sub>2</sub> levels may interact with human nutrition.

**Tuesday, March 3, 2020**  
**12:00 – 12:50 P.M.**  
**372 Mathematics and Science Center (MSC)**

(Refreshments at 11:30-12:00 PM in the kitchen area adjacent to 368 MSC)