

# MATH SEMINAR SERIES

11:30 AM - 12:30 PM, OCTOBER 15TH, 2024

JOINT HEALTH SCIENCE CENTER  
(201 S. BROADWAY, CAMDEN, NJ 08103)

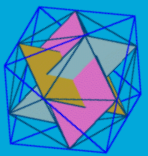
ROOM 104A

## Professor. Jana Gevertz The College of New Jersey



**Title:** Smart Data, Smarter Models: Enhancing the Predictive Power of Mathematical Models of Cancer

**Abstract:** Mathematical models are powerful tools that can vastly improve our understanding of cancer dynamics and treatment response. However, to be useful, experimental or clinical data are necessary to both train and validate such predictive models, and not all data are created equal. Here I present two methodologies that improve upon model-informed experimental design and model-based predictions. First, I will introduce a multi-objective optimization algorithm to identify combination protocols that maximize synergy from the perspective of both efficacy and potency (toxicity), while simultaneously reconciling sometimes contradictory assessments made by different synergy metrics. Second, using the notion of parameter identifiability, I will address the question of what is the minimal amount of experimental data that needs to be collected, and when it should be collected, to have confidence in a model's predictions. Real-world applications of both methodologies will be presented.



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