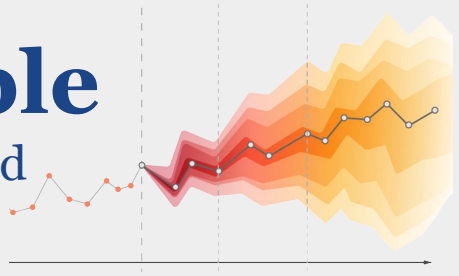
Modeling the Invisible

Competition on Forecasting Viral Spread with Limited Data



Workshop Dates: July 29 – August 1, 2025
Location: Mathematics Interactive Learning Environment (MILE) Lab, 25 Park Place NE, Atlanta, GA
Application Deadline Monday June 16, 2025 Limited spots available.

Workshop Overview: This hands-on, team-based workshop invites participants to build and refine predictive models of viral epidemics under realistic constraints, including incomplete and noisy data. Over three days, teams will be challenged to generate forecasts for simulated influenza outbreaks. Participants are encouraged to apply a range of modeling approaches, from mechanistic to statistical and machine learning methods, to interpret data, uncover underlying dynamics, and improve predictions over time. The goal is to foster creativity, rigor, and critical thinking in epidemic forecasting, echoing the complexities and uncertainties faced in real-world public health response.

Goals

- Train students in real-time biological modeling and forecasting
- Explore modeling under data limitations and uncertainty
- Foster collaboration and innovation in infectious disease prediction

Competition Format

Participants compete in three challenges using staged data releases:

- Challenge 1 – Accurate, complete simulated data
- Challenge 2 – Only severe cases; partial data
- Challenge 3 – Noisy, realistic epidemic data

Teams will be scored on forecast accuracy, parameter estimation, and early predictive ability.

Sample Model & Data

Participants will receive sample datasets for influenza outbreak 2 weeks in advance (starting July 15) to prepare initial models.

Who Should Attend?

Undergraduate and graduate students from STEM backgrounds, especially those with interests in mathematical biology, epidemiology, AI/ML, or data science. Diversity is a core focus; students from Atlanta-based universities and MSIs are strongly encouraged to apply.

What You'll Gain

- Hands-on experience with real-time epidemic modeling
- Exposure to interdisciplinary modeling strategies
- Mentorship and networking with international researchers
- Travel funds and housing provided (if needed)

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More info:
https://sites.google.com/iu.edu/modelingtheinvisibleworkshop/

Organizers
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