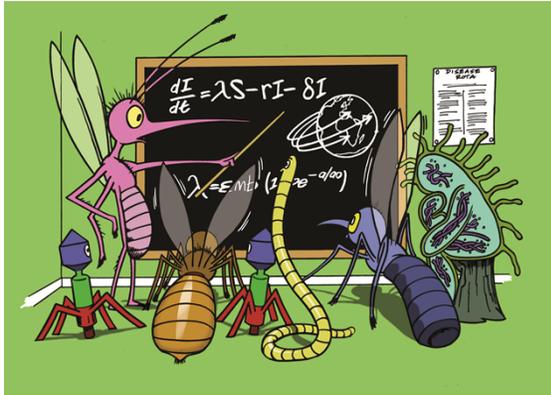


Fall 2020 Course Announcement
School of Public Health: Division of Epidemiology & Biostatistics

PB HLTH 290 Infectious Disease Modeling Seminar (2 units)



Instructor: John Marshall,
<http://www.MarshallLab.com>
Email: john.marshall@berkeley.edu
Day/Time: Wednesday, 4-5pm
First class: August 26, 2020
Location: Zoom
This course is appropriate for: PhD, MPH and DrPH students with an interest in infectious disease modeling

Course description and scope: The use of mathematical models in epidemiology dates back to 1760, when Daniel Bernoulli tried to influence public policy by modeling the potential population-level benefits of universal smallpox inoculation. Since then, many developments have been made and mathematical models are now greatly enhancing our understanding of the epidemiology and control of infectious diseases. This has been especially evident with the ongoing COVID-19 pandemic, which will be a major focus of the course this semester.

This seminar will take the form of a weekly journal club, beginning with a review of some of the classic papers on infectious disease modeling, and moving on to some of the latest developments in the field – e.g. the role of genetic data in model development and the use of advanced model fitting techniques such as approximate Bayesian computation. Examples will be drawn from COVID-19, H1N1 influenza, Ebola, HIV, and mosquito-borne diseases such as malaria and Zika virus. The seminar will be discussion-based, and if students have interests in particular infectious diseases and methods, these may be included in the course syllabus too.

Relation to other courses: This course is complementary to PB HLTH 252B (offered annually in the spring semester). PB HLTH 252B is activity-based, teaching students to design their own model, fit it to data and use it to answer a specific research question. This course surveys the literature in the field, providing context for the concepts raised in PB HLTH 252B, and extending these concepts by exploring the latest developments in the field.

Upon completion of this course, students will be able to:

- Understand the basic concepts of infectious disease modeling – the susceptible-infectious-recovered model and its variants, the role of heterogeneity in sustaining transmission, the importance of stochasticity at low prevalence, etc.
- Understand current developments in the field of infectious disease modeling, e.g. application to the COVID-19 pandemic, integrating genetic data with modeling, etc.
- Develop skills and confidence in critically analyzing infectious disease modeling papers

For more information, please contact the course instructor (john.marshall@berkeley.edu)