**Models for Understanding and Controlling Global Infectious Diseases**

**HRP 204 Graduate Section Information**

**Spring Quarter 2020**

**Overview**

A weekly one-hour session will be offered for graduate students enrolled in HRP 204 (optional for advanced undergraduates with permission of the instructor), in which more advanced topics in infectious disease modeling will be discussed. This will involve additional readings from the modeling literature, examination of sophisticated techniques in model design, parameterization and analysis, and discussion of challenges in generating robust models with public health significance.

**Organization**

The graduate section will be organized similarly to a journal club. The expectation is that all students will have read the assigned article for the week. Each week, a group of around four students will present the selected article. Following the presentation, we will break into small groups (~6 people per group) to discuss a series of questions posed by the presenters. At the end of each section, groups will report back to the full class.

* Student Presentation: 20 minutes
* Instructor Insights: 5-10 minutes
* Breakout Group Discussions: 20 minutes
* Report Back and Wrap-Up: 10-15 minutes

Note: we may update how the graduate section is run as we go to accommodate the larger section size and to better foster discussion

**Presentation Guidelines**

You should split up the development of your presentation with other members of your group in a way that allows everyone to contribute, and split up presenting so that each member has a chance to present part of the presentation. Your presentation should take no more than 20 minutes and cover the following elements:

* Background: start by identifying the scientific problem discussed in the paper and the context for why it is important and what was already known about the problem.
* Methods: how did the authors attempt to address the problem? What type of model/data did they use?
* Results: main findings and sensitivity analyses
* Discussion: summarize the strengths and limitations of the study, remaining unanswered questions, and possible alternative approaches
* Discussion Questions: prepare 4-5 questions for small group discussion

**Grading**

Presenting and participating in section will account for 20% of your course grade. Everyone enrolled in HRP 204 is expected to present once and attend as many sections as possible (live). Please email the course instructors if it will be challenging for you to regularly attend section.

**Schedule and Papers**

Section will meet from 5:15-6:15 pm, except for weeks 1 and 10, when no section will be held.

Week 1 (4/9) – no section

Week 2 (4/16)

Blower SM, Small PM, Hopewell PC. Control strategies for tuberculosis: new models for old problems. *Science* 1996; (5274), 497-500.

Week 3 (4/23)

Pitzer et al, Demographic variability, vaccination and the spatiotemporal dynamics of rotavirus epidemics. *Science*, 2009; 325(5938): 290-294.

Week 4 (4/30)

Leung K, Wu JT, Liu D, Leung GM. First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment. *Lancet.* 2020.

Week 5 (5/7)

Christakis and Fowler. Social network sensors for early detection of contagious outbreaks. *PLoS One,* 2010; 5(9): e12948.

Week 6 (5/14)

Bauch CT. Imitation dynamics predict vaccinating behaviour. *Proc Biol Sci.* 2005 Aug 22;272(1573):1669.

Week 7 (5/21)

Cohen and Murray. Modeling epidemics of multidrug-resistant tuberculosis of heterogeneous fitness. *Nature Medicine,* 2004. 10(10) 1117-1121.

Week 8 (5/28)

TBD – likely Professors Andrew and Goldhaber-Fiebert will present their recent work on modeling COVID-19 for the State of California

Week 9 (6/4)

Corey M. Peak, Lauren M. Childs, Yonatan H. Grad, Caroline O. Buckee. Comparing nonpharmaceutical interventions for containing emerging epidemics. *Proceedings of the National Academy of Sciences* Apr 2017, 114 (15) 4023-4028

Week 10 – no section