Math 561, Section 201: Mathematics of Infectious Diseases and Immunology

`http://www.math.ubc.ca/~coombs/561/math561.html`

Instructor: Dr. Daniel Coombs.
Office: Mathematics Annex, Room 1109.
Email: coombs (at) math (dot) ubc (dot) ca
Phone: 604-822-2859

Class hours: 2pm-3.20pm, Tuesday and Thursday.

Topics

Models for disease spread and pathogen evolution: Basic concepts of mathematical epidemiology for simple and for structured populations. We will also review some concepts of pathogen evolution. The best book on this topic is Diekmann and Heesterbeek.
Virus dynamics modeling: Development of virus models from experimental data; model analysis; implications for epidemic models.
Immune system models: Antigen detection by antibodies and receptors. T cell activity and immune synapse. Cell adhesion, ligand binding.

Activities

- Final grades will be assigned roughly as follows: Homework 35%, Paper presentation and written summary 15%, project proposal 5%, project 35%, participation in class 10%.
- There will be homework sets.
- Each student will choose a paper from the reading list, present the main results of that paper in class and write a 3-page summary/review with discussion.
- A final project will be proposed by the students (probably in groups), written up, and presented.

Daniel Coombs / *Department of Mathematics* / *University of British Columbia*