

A brief introduction to the course

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Who is Robert Smith?

- Most profs never tell you how to address them
- You can call me either Robert or Dr. Smith?
- Either is fine, although I prefer Robert
- Let me be clear: I *strongly* prefer that you call me Robert
- But if you use my surname, don't forget the question mark
- The question mark is part of my name so deal with it.

What do I do when I'm not teaching?

- I'm a tenured professor
- This means I conduct research into cutting-edge topics using mathematics
- In my case, I research infectious diseases
- These include
 - HIV
 - human papillomavirus
 - various tropical diseases
 - zombies.

HIV

- If a disease-modifying vaccine were introduced, could it make things worse?

(Answer: Yes, unless it significantly lowered the transmissability of the virus)

- How many doses of your HIV drugs could you safely miss without causing drug resistance?

(It depends on the individual regimen, but short breaks can be tolerated)

- Can we spend our way out of the AIDS epidemic?

(Yes, but we have to act quickly).

Human papillomavirus

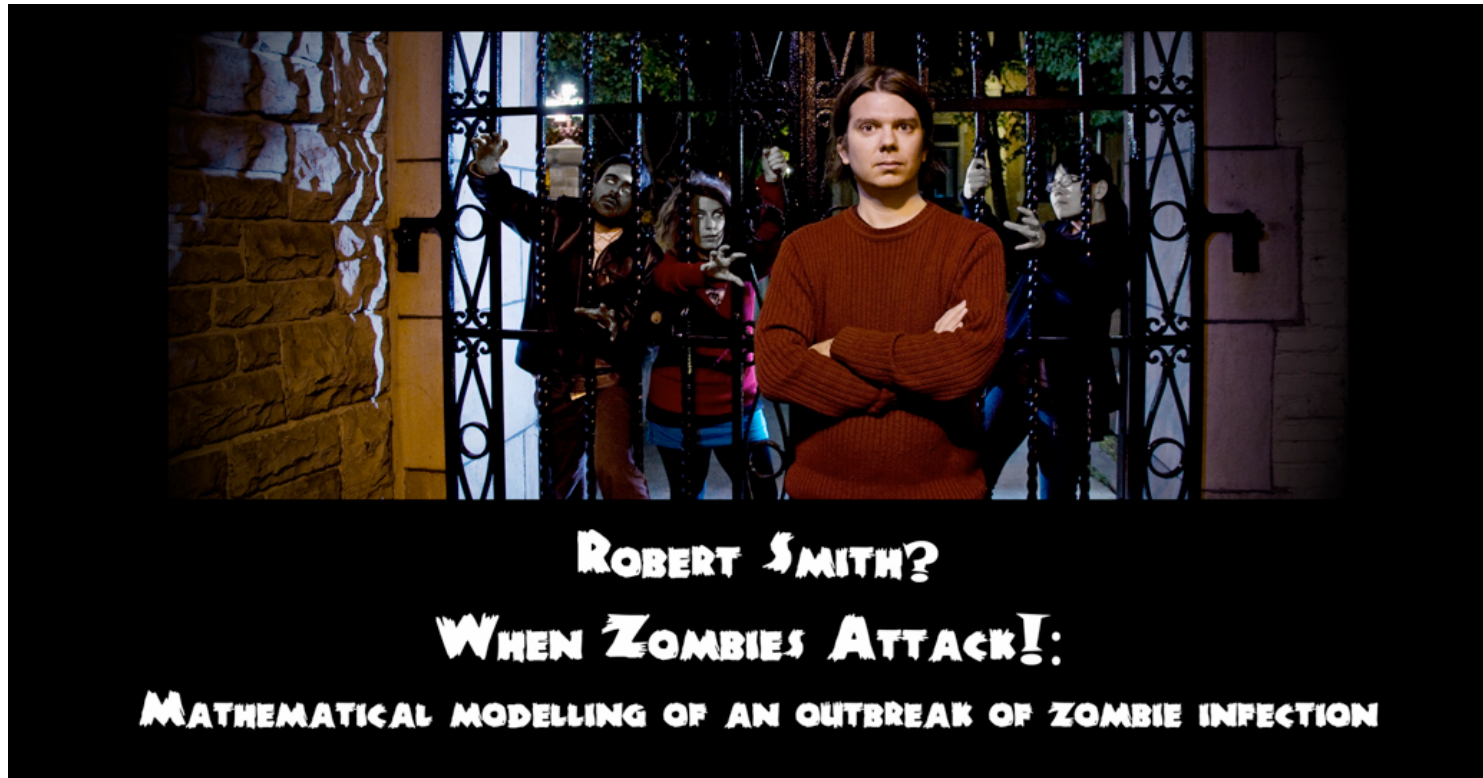
- There's a new vaccine being given to children for free in schools, but adults have to pay for it
- Should we supplement the childhood vaccination program with an adult one?
(Answer: Yes, even moderate increases in adult vaccination can lead to eradication of certain HPV strains).

Tropical diseases

- How often should we spray insecticide to control mosquitos in sub-Saharan Africa?
(Answer: Every few months, but the frequency is going to have to increase as global warming makes mosquitos breed faster)
- What's the best way to eradicate Guinea Worm disease, a parasite you get from the water?
(Education about not reinfesting the water is best, but chlorination and distributing cloth filters to the remaining four countries can result in total eradication within the next few years).

Zombies

- Can we survive a zombie outbreak?
(Answer: Yes, but only if we strike first and strike quickly...
...otherwise we're all going to die).



What's this course about?

- A. How we use math to learn about the world
- In particular, it's about using zombies to illustrate modelling techniques
- These include
 - differential equation models
 - network theory
 - individual-based models
 - statistical inference
 - fuzzy decision-making
- But we'll also learn how to understand the relevance of zombies in society.

Format

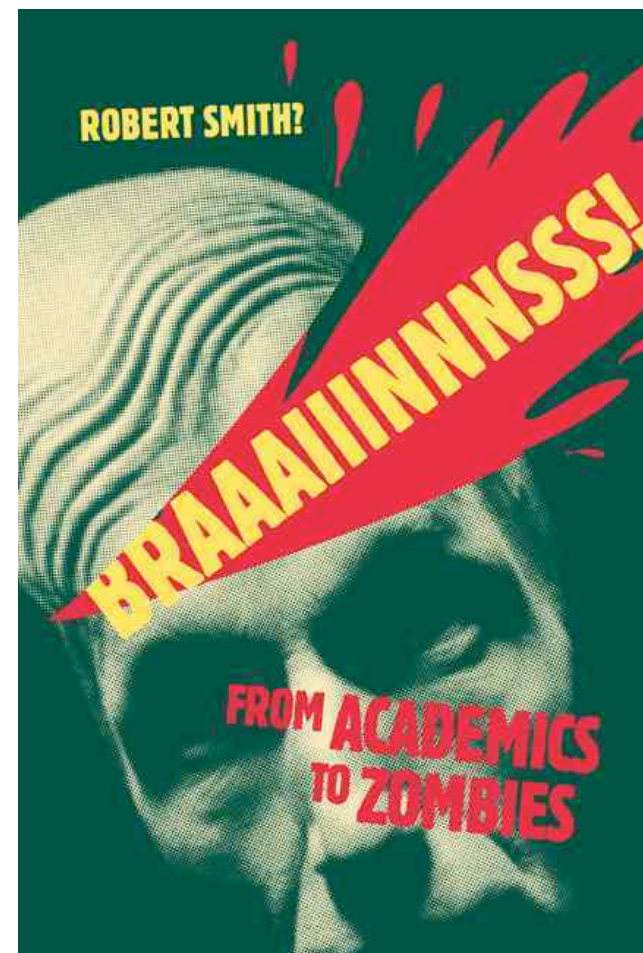
- Mondays are lectures
- Wednesdays are presentations from the book
- However, everyone is expected to read the chapter
- You can do presentations in groups
 - bonus marks to whomever volunteers for this Wednesday's presentation
- Wednesdays are also class discussion
 - we will discuss issues from that week's chapter
 - I expect lively participation.

Assessment

- Assignments will be handed out in class
- Always due the following Wednesday
 - ie either 7 or 9 days later
- One of the assignments will be an essay
 - this can address any topic involving zombies
- There's also a project
 - create a detailed mathematical model of zombies
 - again, this can be done in groups
 - a presentation late in the semester
- There's also a late midterm, but no final.

Textbook

- Braaaiinnnnss!: From Academics to Zombies
- Edited by Robert Smith?
 - but written by all manner of zombie experts
- University of Ottawa press
 - available from the bookstore
 - or Amazon
 - also available as an e-book.



Website

- <http://mysite.science.uottawa.ca/rsmith43/ZombieCourse/ZombieCourse.htm>
- Easy way: google my name and it's on my website
- Lectures will be posted there in advance
- Check it regularly for class updates.

Language

- Math is like a language
- You can't learn a language by sitting in class and listening to someone speak it
- You need to practice, practice, practice
- And then practice some more
- If you do this, you'll become fluent in math
- And, if you follow me...
...I'll teach you how to fight zombies.