Mathematical models of infectious disease
List of computer exercises

John M. Drake & Pejman Rohani

1 Objectives

The objectives of this course are:

1. To introduce the student to several models that express the core theory for the propagation of epidemics

2. To teach the numerical methods needed to study these models

3. To teach the statistical methods needed to parameterize these models for specific applications ("model fitting")

2 Topics

These following topics will be covered in computer lab exercises:

1. Introduction to scientific programming in R

2. Numerical solution of deterministic epidemiological models

3. Structured models for host heterogeneities

4. Estimation

5. Stochastic simulation

6. Pulsed vaccination

7. Social distancing

8. Sensitivity analysis of deterministic models through Latin hypercube sampling: A model for the spread of Ebola virus disease