

### MMPH6168 Infectious disease modelling

## **Coordinator: Prof J Wu**

### **Course Description:**

This course is an introduction to mathematical modeling of infectious disease dynamics and control. The course is designed for students who have a strong background in infectious disease epidemiology and determine to advance their knowledge and skills with infectious disease modeling. Topics include basic epidemic theory, estimation of transmissibility and clinical severity, parameter estimation, stochasticity, evidence synthesis, assessment of uncertainty, cost and effectiveness evaluation of interventions, and optimization of control strategies under resource constraints.

**Prerequisite:** (i) CMED 6211 Infectious disease epidemiology; and (ii) strong programming skills in R or equivalent (including the use of loops, conditional statements, and functions). Fulfillment of such pre-requisites before or during the course is solely the responsibility of the enrolled students. Students who have little or no experience in computer programming are expected to self-learn these skills via free online courses such as R Programming on Coursera (<u>https://www.coursera.org/learn/r-programming</u>).

Term 3 (Monday)			Contact person: Ms Zhenyu Wang	
Date	Time	Lecture Topic	Lecturer	Venue
12 May 2025	6:30 – 9:30 pm	1. Basic epidemic theory	Prof J Wu	TBC
19 May 2025	6:30 – 9:30 pm	2. Modeling interventions	• Prof J Wu	TBC
		Tutorial or Q&A		
26 May 2025	6:30 – 9:30 pm	3. Parameter estimation 1	Prof J Wu	TBC
		Tutorial or Q&A		
02 June 2025	6:30 – 9:30 pm	4. Parameter estimation 2	Prof J Wu	TBC
		Tutorial or Q&A		
09 June 2025	6:30 – 9:30 pm	5. Uncertainty	Prof J Wu	TBC
		Tutorial or Q&A		
16 June 2025	6:30 – 9:30 pm	6. Stochasticity	Prof J Wu	TBC
		Tutorial or Q&A		
23 June 2025	6:30 – 9:30 pm	7. Modeling logistics	Prof K Leung	TBC
		Tutorial or Q&A		
30 June 2025	6:30 – 9:30 pm	8. Evidence synthesis	Prof K Leung	TBC
		Tutorial or Q&A		
07 July 2025	6:30 – 9:30 pm	9. Molecular epidemiology	Prof T Lam	TBC
		Tutorial or Q&A		
14 July 2025	6:30 – 9:30 pm	10. Health economic evaluation	Prof K Leung	TBC
		Tutorial or Q&A		
28 July 2025	6:30 – 8:30 pm	Final Examination	-	TBC

### Tutors/TAs: Mr Zhenyu Wang/ Ms Chrissy Pang

# Course Assessment:

Coursework: 70% Examination: 30%

**Recommended Textbook:** 

1. Vynnycky E, White RG. An Introduction to Infectious Disease Modelling. Oxford Univ. Press, 2010.

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