Introduction to Infectious Disease Modelling and its Applications

Provisional timetable 2017

Week 1

Monday, 19th June

8.45-9.30	Registration	
9.30-10.00	Introduction	Introduction to the course
10.00-11.00	Lecture	1. Introduction to the epidemiology of infections
11.00-11.30		**Coffee break**
11.30-12.30	Lecture	2. Why bother with modelling?
12.30-1.15		**Course lunch**
1.15-2.00		**Introduction to the computing network**
2.00-3.00	Lecture	3. Basic methods for setting up models I – difference equations
3.00-3.30		**Coffee break**
3.30-4.50	Practical	3. Setting up and interpreting simple models (measles in Excel)
5.00-6.15	Guest lecture	Guest lecture
6.30-8.00		**Reception**

Tuesday, 20th June

9.00-10.00	Lecture	4. Basic methods for setting up models II – differential equations
10.00-10.30		**Coffee break**
10.30-12.00	Practical	4. Setting up and interpreting simple models in Berkeley Madonna
12.00-1.00		**Lunch break**
1.00-2.00	Discussion	Maths refresher (optional)
2.00-3.00	Lecture	5. The natural dynamics of infectious diseases
3.00-3.30		**Coffee break**
3.30-4.55	Practical	5. Analysing the dynamics of infectious diseases
5.05-6.00	Guest lecture	Guest lecture

Wednesday, 21st June

9.00-10.00	Lecture	6. Review (optional)
10.00-10.30		**Coffee break**
10.30-11.55	Practical	7. Further practice in setting up models in Berkeley Madonna – modelling influenza transmission
12.05-1.00	Lecture	8. Applying modelling techniques to analyse seroprevalence data
1.00-2.00		**Lunch break**
2.00-3.00	Lecture	9. Fitting models to data
3.00-3.30		**Coffee break**
3.30-5.00	Practical	8/9. Estimating forces of infection by fitting models to seroprevalence data
5.15+		**Optional social outing (walk)**

Thursday, 22nd June

9.00-10.30	Practical	10. Contrasting the effects of rubella vaccination between high and low transmission settings
10.30-11.00		**Coffee break**
11.00-12.00	Lecture	11. Methods for incorporating non-random mixing into models
12.00-12.15		Introduction to the group work exercise
12.15-12.45		Group photo
12.45-1.30		**Lunch break**
1.30-2.15	Guest lecture	Guest lecture
2.15-3.45	Practical	11. Simulating the effects of non-random mixing on transmission and control
3.45-4.05		**Coffee break**
4.05–5.15	Group work	12. Work on the group work exercise
5.15-6.15	Pub quiz	Pub quiz (optional)

Week 1 (cont)

Friday 23rd June

9.00–10.30	Group work	13. Work on the group work exercise (Flu/Ebola)
10.30-11.00		**Coffee break**
11.00-11.55	Lecture	14. Estimating basic reproduction numbers for non-randomly mixing populations
11.55-12.30	Lunch	
12.30-1.45	Guest lecture	Guest lecture
1.45-3.00	Practical	14. Calculating basic reproduction numbers for non-randomly mixing populations
3.00-3.30		**Coffee break**
3.30-4.55	Paper discussion	15. Topical paper discussion
5.05-6.15	Guest lecture	R_0 (Hans Heesterbeek)
6.15+		**Optional social outing – meal + Eye**

Week 2

Monday, 26th June

9.00-10.00	Lecture	16. Review (optional)
10.00-10.30		**Coffee break**
10.30-11.25	Lecture	17. Introduction to stochastic modelling and its applications
11.35-1.00	Practical	17. Setting up stochastic models of outbreaks
1.00-2.00		**Lunch break/modelling clinic**
2.00-3.00	Lecture	18. Using health economics in infectious disease modelling
3.00-3.30		**Coffee break**
3.30-5.00	Practical	18. Health economics and sensitivity analysis: Cost-effectiveness of seasonal influenza vaccination
5.15-6.00	Guest lecture	Guest lecture

Tuesday, 27th June

9.00-10.15	Practical	19. Setting up discrete-time stochastic models in Berkeley Madonna (modelling nosocomial transmission)
10.15-10.30		**Coffee break**
10.30-11.25	Lecture	20. Network modelling
11.35-1.00	Practical	20. Network modelling
1.00-2.00		**Lunch break/modelling clinic**
2.00-3.30	Practical	21. Applications of stochastic models: estimating R_n for eliminated and emerging diseases
3.30-4.00		**Coffee break**
4.00-5.30	Groupwork	22. Groupwork (Flu/Ebola)

Week 2 (cont)

Wednesday, 28th June

9.00-10.30	Groupwork	23. Groupwork (Flu/Ebola)	
10.30-11.00		**Coffee break**	
11.00-11.55	Lecture	24. An introduction to real-time modelling	
12.05-1.00	STI/Vet lecture	25. Simple sexually-transmitted infection model	26. Applications in veterinary epidemiology: Spatial transmission and meta-population models
1.00-2.00		**Lunch break/modelling clinic**	**Lunch break/modelling clinic**
2.00-3.30	STI practical/ Vet practical	25. Simple sexually-transmitted infection models	26. Applications of models to veterinary epidemiology and zoonoses
3.30-3.50		**Coffee break**	**Coffee break**
3.50-4.50	HIV/MAL lecture	27. Modelling HIV transmission and control	28.Modelling malaria transmission and control
5.00-6.00	Lecture (optional)	29. Fitting models to data II - numerical optimisation and sensitivity analysis	
6.45+		**Optional social outing (theatre)**	

Thursday, 29th June

9.00-10.00	Lecture	30. An introduction to phylodynamics	
10.00-10.30		**Coffee break**	**Coffee break**
10.30-11.55	PD/MAL practical	30. The applications of phylodynamics	28 (cont). The Ross-Macdonald model
12.05-1.00	TB /RT Lecture	31. Models for the transmission dynamics of *M tuberculosis*	32. The applications of real-time modelling
1.00-2.00		**Lunch break/modelling clinic**	**Lunch break/modelling clinic**
2.00-3.30	TB/RT practical	31. Modelling *M tuberculosis* transmission and disease	32. The applications of real-time modelling
3.30-3.50		**Coffee break**	
3.50-5.15	Group work	33. Work on the group work exercise (Flu/Ebola)	

Friday, 30th June

9.00-11.00	Groupwork	34. Poster presentations
11.00-11.30		**Coffee break**
11.30-11.50	Groupwork	35. Conclusion to the groupwork exercise
11.50-12.30	Discussion	Course evaluation
12.30-1.30	Lunch	Course lunch
1.30		**END OF COURSE**