Swiss Epidemiology Winter School 2021

UNIVERSITÄT BERN

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

SSPH+ SWISS SCHOOL OF PUBLIC HEALTH +

Infectious disease models and their use in the SARS-CoV-2 pandemic

18 – 20 January 2021

Faculty	**Dr. Christian L. Althaus, PhD** **Dr. Julien Riou, PhD** **Dr. Emma Hodcroft, PhD** Institute of Social and Preventive Medicine (ISPM), University of Bern, Switzerland
Venue	Online course on Zoom
Description	Infectious disease modelling has become a key tool for improving understanding about transmission and the potential impact of public health interventions, as illustrated during the SARS-CoV-2 pandemic. In this online course, students will be introduced to the history and main concepts of mathematical modelling of infectious diseases such as compartmental models, the basic and effective reproduction numbers and the vaccination threshold. We will further study the application of Bayesian inference in infectious disease models and the use of genomic epidemiology for the spread of emerging infectious diseases. Finally, we will discuss how infectious disease models have shaped our understanding of the SARS-CoV-2 pandemic and influenced policy making. The course offers optional exercises for self-study. Previous knowledge of R will be useful but is not essential.
Objectives	• To understand the role of infectious disease dynamics for research and health care • To become familiar with the basic concepts of mathematical models of infectious diseases • To use simple and advanced mathematical models to study disease transmission and control interventions, with a focus on COVID-19.

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Target audience	PhD students and post-doctoral researchers who want to gain a basic understanding of mathematical modelling in infectious disease epidemiology and/or who are interested in the role of mathematical modelling in understanding and controlling a pandemic.
Outline	The course will run over three mornings and consist of lectures and optional exercises for self-study. ***Monday, 18 January (9:00 – 12:30)*** ***Tuesday, 19 January (9:00 – 12:30)*** ***Wednesday, 20 January (9:00 – 12:30)***
Credits	1.0 ECTS
To bring along	Online lectures will be held on Zoom. Exercises for self-study require an installed version of the R programming language for statistical computing (https://rstudio.com or https://www.r-project.org) and the probabilistic programming language for statistical inference Stan (https://mc-stan.org).
Course fee	CHF 200 The course fee is non-refundable
Registration	You can register on the Winter School website www.epi-winterschool.org.

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