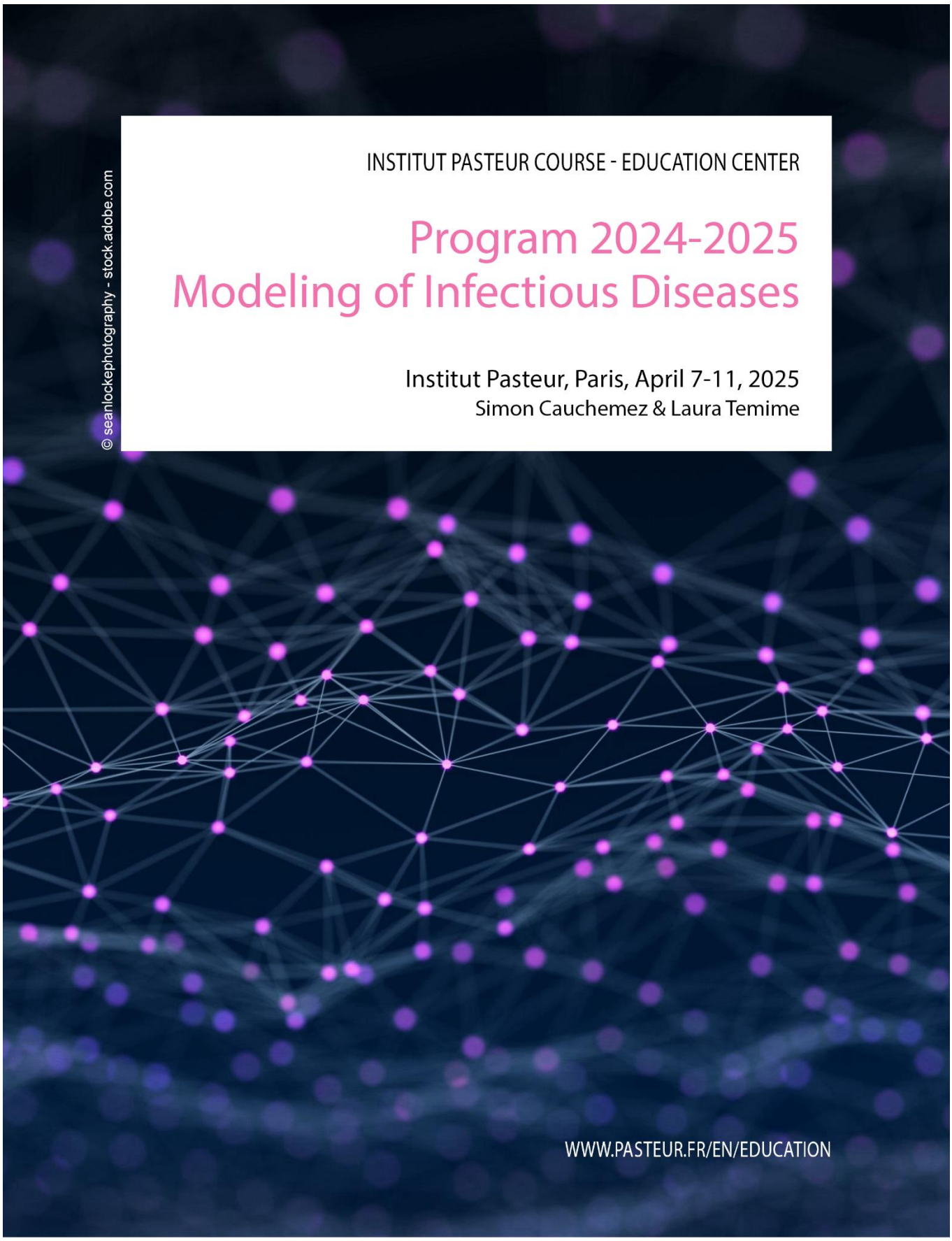

INSTITUT PASTEUR COURSE - EDUCATION CENTER

Program 2024-2025
Modeling of Infectious Diseases

Institut Pasteur, Paris, April 7-11, 2025

Simon Cauchemez & Laura Temime

WWW.PASTEUR.FR/EN/EDUCATION

Université Paris Cité

le cnam

INSTITUT PASTEUR

INSTITUT PASTEUR
EDUCATION

DIRECTORS OF THE COURSE:

Simon CAUCHEMEZ
Institut Pasteur
simon.cauchemez@pasteur.fr

Laura TEMIME
Le cnam
laura.temime@lecnam.net

Location

Institut Pasteur - Education Center - Pavillon Emile ROUX
28, rue du Docteur Roux 75015 Paris

Lectures Room N° 5

COURSE DESCRIPTION

This one-week course *aims at introducing the main modeling techniques and applications to students and professionals in science, medicine and public health.*

The main learning objectives of the course are that participants:

1) Understand the key theoretical concepts and techniques of infectious disease modeling;

2) Can read modeling papers, understand the strengths and limits of modeling approaches; and are able to use modeling results in their own research and effectively interact with modelers.

To achieve these objectives, the course will be partitioned in three types of sessions: a set of lectures introducing key theoretical concepts and techniques, a seminar series illustrating how these concepts are being used to tackle major Public Health challenges, and practical sessions during which participants will learn to implement, run and use models.

* * * * * * *

Course program - Modeling of Infectious Diseases 2024-2025

Monday, April 7th

9:00 - 9:30	Welcome		**Simon Cauchemez / Laura Temime** (Institut Pasteur/Le cnam)
9:30 - 10:45	Lecture:	Introduction to modeling	**Simon Cauchemez** (Institut Pasteur)
10:45 - 11:00	*Break*		
11:00 - 12:15	Lecture:	Principle and design of compartmental models	**Laura Temime** (Le cnam)
13:30 - 15:45	Practical:	Developing a model on paper	**Laura Temime** (Le cnam)
15:45 - 16:00	*Break*		
16:00 - 17:15	Introduction of Mini Projects		**Simon Cauchemez** **Laura Temime** (Institut Pasteur/Le cnam)

Tuesday, April 8th

9:00 - 11:15	Practical developing a model in a computer		**Simon Cauchemez** (Institut Pasteur)
11:15 - 11:30	*Break*		
11:30 - 12:15	Lecture:	Reproduction number and key model parameters description and estimation	**Simon Cauchemez** (Institut Pasteur)
13:30 - 14:45	Lecture:	Reproduction number and key model parameters description and estimation (continuing)	**Simon Cauchemez** (Institut Pasteur)
14:45 - 15:00	*Break*		
15:00 - 16:45	Practical:	Estimating model parameters and calibrating models to data	**Simon Cauchemez** (Institut Pasteur)
16 :45-17 :15	Mini Project		**Simon Cauchemez** **Laura Temime** (Institut Pasteur/Le cnam)

Wednesday, April 9th

9:00 - 11:15	Lecture and practical: Stochastic models	**Laura Temime** (Le cnam)
11:30 - 12:45	Mini Project	**Simon Cauchemez** **Laura Temime** (Institut Pasteur/Le cnam)
14:00 – 17:00	Lecture and practical: Model validation, uncertainty and sensitivity analyses	**Lulla Opatowski** (UVSQ/Inserm/Institut Pasteur)

Thursday, April 10th

9:00 - 11:00	Lecture: Beyond compartmental models	**Quentin Leclerc** (Le cnam)
11:15 - 12:15	Seminar: Modeling the impact of vaccines	**Paolo Bosetti** (Institut Pasteur)
13:30 - 16:00	Mini project	**Quentin Leclerc/Paolo Bosetti** (Le cnam/Institut Pasteur)
16:15 - 17:15	Seminar: Modeling nosocomial infections	**Quentin Leclerc** (Le cnam)

Friday, April 11th

9:00 - 11:00	Mini project	**Simon Cauchemez** **Laura Temime** (Institut Pasteur/Le cnam)
11:00 - 12:30	Mini project presentations	
14:00 - 15:00	Seminar: Modeling arboviruses	**Henrik Salje** (University of Cambridge)
15:00 - 16:00	***Exam***	
16:00 - 16:30	*Course evaluation / Survey*	
16:30 -	*Pot de fin de cours / Social event*	