

Summer School

14-18 September, 2026

# EXPOSOME ANALYTICS

Imperial School of Public Health  
London, United Kingdom

## Format

The **Exposome Analytics** course will be held at the School of Public Health, Imperial College London, from September 14<sup>th</sup> to 18<sup>th</sup>, 2026. Each of the five days features a structured blend of theory and application, beginning with lectures introducing theoretical concepts, followed by engaging seminars and hands-on practical sessions. The daily themes will cover concepts from *Computational Epidemiology*, *Causal Thinking*, *Machine Learning*, *Artificial Intelligence*, and *Deep Learning* with a focus in exposome science.

## Learning outcomes

Upon completion of the **Exposome Analytics** course, participants will be able to:

- » Evaluate a range of Exposome Analytics approaches and their extensions
- » Implement these methodologies to analyse real-world datasets, and adapt to complex study designs
- » Integrate Exposome data to investigate specific outcomes of interest using regression and correlation models
- » Infer causal, ML and AI approaches to analyse and integrate complex Exposome data

## Who would benefit

**Exposome Analytics** is designed for academics (students and researchers) and industry scientists (pharmaceuticals, insurance, food industries) seeking to deepen their skills in machine learning and AI, causal inference, and computational modelling of high-throughput health data. Proficiency in basic statistics, R and Python programming is desirable.

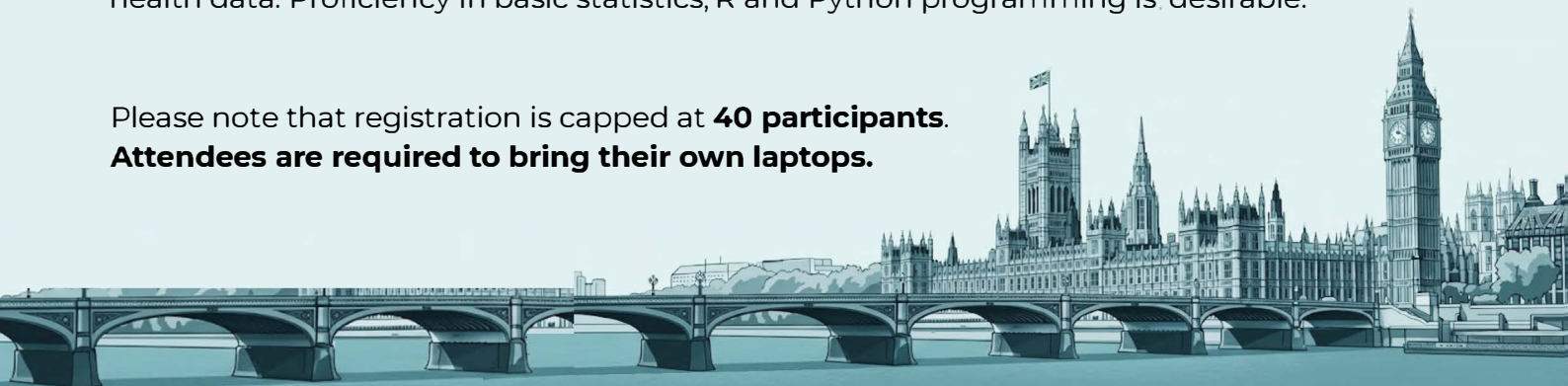
Please note that registration is capped at **40 participants**.  
**Attendees are required to bring their own laptops.**

## Keynote Speakers

Prof Marc-Chadeau-Hyam

| Prof Roel Vermeulen

| Prof Benoit Liquet



## Monday, 14<sup>th</sup> September

## Computational Epidemiology

Morning	Introductory Keynote: Exposome Analytics Stability Selection in Practice	Prof Marc Chadeau-Hyam Ruben Colindres-Zuehlke
Afternoon	Real-world Exposome Applications Practicals	Prof Marc Chadeau-Hyam Chadeau Teaching Team

## Tuesday, 15<sup>th</sup> September

## Causal Thinking

Morning	Causal Concepts Penalised Structural Models (pSCM): stability approaches Mediation and Counterfactual modelling	Dr Helene Colineaux Ruben Colindres-Zuehlke Dr Helene Colineaux
Afternoon	Seminar: pSCM and Mediation Analysis of CVD Practicals	Ruben Colindres-Zuehlke Chadeau Teaching Team

## Wednesday, 16<sup>th</sup> September

## Machine Learning

Morning	Introduction and Overview Tree-Based Models and Importance Metrics Neural Networks and Predictive Approaches	Dr Dragana Vuckovic Dr Matthew Whitaker Dr Dragana Vuckovic
Afternoon	Keynote: Exposome Research: Lessons Learnt, Challenges, and Ways Forward Practicals	Prof Roel Vermeulen Chadeau Teaching Team

## Thursday, 17<sup>th</sup> September

## Deep Learning

Morning	Overviews of Deep Learning Key Algorithms Tutorial: Real-World Application	Prof Benoit Liquet
Afternoon	Practicals	Chadeau Teaching Team

## Friday, 18<sup>th</sup> September

## Artificial Intelligence

Morning	Introduction to AI Transformers Natural Language Processing Models	Dr Matthew Whitaker
	Seminar: Literature Review Tools Practicals	Dr Matthew Whitaker Chadeau Teaching Team

### Members of the Chadeau Teaching Team:

Dr Lucas Cheng  
Dr Fernando Guntoro  
Joel Heller  
Rin Wada  
Ruben Colindres-Zuehlke

