# Causal inference for population health sciences

**Facilitators**

- **PD Dr. Tracy Glass, PhD**  
  Swiss Tropical and Public Health Institute & University of Basel

- **Prof. Dr. Giusi Moffa, PhD**  
  Department of Mathematics and Computer Science, University of Basel

**Description**

This 4.5-day in-person course, comprising a mix of lectures and hands-on practical sessions, is aimed at students who want to gain a fundamental understanding of what causal inference is and how it might apply to their own research.

The course will cover defining the research question in a causal framework, creating a direct acyclic graph, identifying valid covariate adjustment sets, and selecting a method for estimating the causal contrasts. We will guide the learning through lectures followed by practical sessions applying the knowledge gained. The practical sessions will be carried out using R software.

**Objectives**

Students will:

- understand the setting for which causal inference is warranted and the framework for potential outcomes
- understand the difference between causal estimands, estimators, and estimates
- understand how to generate and interpret a directed acyclic graph
- understand hypotheses underlying the identification of causal effects,
- identify the most suitable methods to answer different research questions,
- run basic analyses with the methods presented

**Dates**

18-22\(^{nd}\) September 2023
Eligibility
Open to PhD students of the SSPH+ Inter-university Graduate Campus; other students and external participants are welcome to apply.

Prerequisites
Prerequisites for the course are knowledge in statistics, especially statistical inference and regression modeling with some experience in implementing statistical analysis. Familiarity with R/R studio is preferred for use during the practical sessions.

Course Structure
4.5 days with time split between lectures and practical sessions.

Assessment
Class participation, practicals and quizzes.

Credits
2 ECTS
Preliminary Work: 10 h; Contact time: 36 h; In-course work: 5-10 h
(1 ECTS corresponds to appr. 25-30 hours workload)

Location
Swiss TPH, Kreuzstrasse 2, 4123 Allschwil, Switzerland, room tba

Course Fees
<table>
<thead>
<tr>
<th>IGC course fees</th>
<th>1 ECTS</th>
<th>2 ECTS</th>
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<tbody>
<tr>
<td>SSPH+ IGC Students</td>
<td>30 CHF</td>
<td>30 CHF</td>
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<tr>
<td>Postdocs from partner universities</td>
<td>30 CHF</td>
<td>30 CHF</td>
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<td>External PhD students and MD students</td>
<td>500 CHF</td>
<td>1’000 CHF</td>
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<tr>
<td>Others</td>
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Registration
https://www.conftool.com/ssph-phd-courses2023

Deadline for registration
18 August 2023