PhD Course

**Econometrics**

block course: March 9th- March 11th, 2022, full time

Place: Zoom (Link will be provided on the course website)

Room 027 resp. digital lecture

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**Course Instructor:** Professor Martin Spindler (UHH)

**Course Value:** 2 SWS or 5 LP

**Course Overview:** The main goal of this course is to give an introduction to causal inference, and if time allows to recent developments, in particular on the use of Machine Learning Methods for Causal Inference. Handouts of the slides will be provided during the course. The target audience are empirical researchers/PhD students who want to apply those methods for their research.

**Topics:**
1) Introduction to Causal Inference/Basic Framework
2) Methods for Causal Inference (Diff-in-Diff, IV, Propensity Score Matching, Randomized Control Trials, …)
3) Recent Developments

**Teaching language:** English

**Student evaluation:** Presentation of a recent paper in a blocked session (Summer Term 2022, April 22nd (preliminary)) or presentation/written summary of a research project/idea

**Prerequisites:** Knowledge in regression analysis and basic Statistics/Econometrics

**Registration:** via ls.statistik@uni-hamburg.de and/or directly in STiNE
Schedule (tentative):

<table>
<thead>
<tr>
<th>Date</th>
<th>Times</th>
<th>Location</th>
<th>Topics</th>
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<tbody>
<tr>
<td>Day 1 (March 9th)</td>
<td>8:30 - 10:00</td>
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<td>Introduction, Basics of Causal Inference, RCT, Diff-in-Diff, Instrumental Variables Estimation</td>
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<td>10:15 - 11:45</td>
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<td>13:00 - 14:30</td>
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<td>Day 1 (March 10th)</td>
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<td>Regression Discontinuity, Panel Data Methods, Propensity Score Matching</td>
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<tr>
<td>Day 1 (March 11th)</td>
<td>8:30 - 10:00</td>
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<td>Current research papers and recent developments</td>
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References (advanced papers):


Athey and Imbens (2016). Recursive Partitioning for Heterogeneous Causal Effects. PNAS.

Athey and Wager (2017). Estimation and Inference of Heterogeneous Treatment Effects using Random Forests. JASA.


