DIW Graduate Center Masterclass
Course Title : Graphical Causal Models
22-23 Jan, 2015

Instructor: Prof.   Felix Elwert, Ph.D.,
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Course Description:

This course offers an applied introduction to Judea Pearl's directed acyclic graphs (DAGs). DAGs are a visual representation of the qualitative causal assumptions required for causal identification. The two main uses of DAGs are, first, deriving the testable implications of a causal model and, second, non-parametric identification analysis. This course introduces the semantics of DAGs, details the main rules for working with DAGs, and demonstrates the utility of DAGs with many real social science examples.

Concepts covered include:
- Interpretation of DAGs
- DAGs as graphical causal models
- D-separation
- Confounding, endogenous selection, and overcontrol bias
- Testable implications
- Non-parametric identification criteria
- Real social science examples

Requirements
Participants should have a solid applied background in multiple regression and basic probability theory. The course does not require calculus or matrix algebra, though neither will hurt.

Readings (not required)

Elwert, Felix. 2013. "Graphical Causal Models." Pp. 245-273 in S. Morgan (ed.), *Handbook of Causal Analysis for Social Research*. Dodrecht: Springer.

> http://www.ssc.wisc.edu/soc/faculty/pages/docs/elwert/Elwert%202013.pdf

Elwert, Felix, and Christopher Winship. 2014. "Endogenous Selection Bias: The Problem of Conditioning on a Collider Variable." *Annual Review of Sociology* 40:31-50.

> http://www.ssc.wisc.edu/soc/faculty/pages/docs/elwert/Elwert%20Winship%2020 14.pdf

Instructor
Felix Elwert (Ph.D., Harvard 2007) is Vilas Associate Professor of Sociology at the University of Wisconsin-Madison and Kar W. Deutsch Visiting Professor at the Social Science Research Center Berlin. He is the winner of the first *Causality in Statistics Education Award*, given by the *American Statistical Association* in 2013. His research focuses on methods of causal inference with applications in social stratification, social demography, and network analysis. His work has appeared in the *American Journal of Sociology*, the *American Sociological Review*, *Demography*, the *American Journal of Public Health*, and *Biometrics*. He teaches courses on causal inference in the United States, Europe, and Asia.