

University of Ljubljana

FACULTY OF ECONOMICS

## LJUBLJANA SUMMER SCHOOL 2012

### COURSE TITLE: QUANTITATIVE MODELS IN MARKETING

#### **Master Course**

**Target audience:** Graduate students, PhD students, young researchers and young academic faculty. This is an upper-intermediate methodological course for the wider area of economics and business, as well as social sciences.

Lecturer: Full Professor Christopher Winship, Harvard University, USA

ECTS credits: 7 ECTS

Maximum number of students: 20 students

#### Aims of the course:

The work of Don Rubin (Harvard-Statistics) and others over the last twenty years on the so called potential outcomes or counterfactual is revolutionizing the way that causality is thought of in the social sciences. The largest impact has been in economics where vast amount of work, both theoretical and applied, by Heckman, Manski, Angrist, Krueger, Imbens, and others has transformed the way that economists do empirical work.

This new way of thinking about causality has started to penetrate the social sciences more widely. In a way similar to what has occurred in economics, we are in the initial stages of a transformation in the way in which sociologists political scientists in particular think about and do causal analysis.

Unlike previous technical innovations in methodology - path models, survival/event history analysis, structural equations, hierarchical linear models - the new causal thinking is not so much about new technical models, as it is about a new and more precise way of thinking about causality in specific circumstances. The new thinking has put emphasis on methods that have only infrequently been used in the past such as matching, which in most respects are considerably conceptually easier to understand than, say, regression. In some cases, the new methods have also done much to illuminate what commonly used methods, such as instrumental variables, are actually estimating. It also has shown how regression estimates often cannot be interpreted as causal effects. More generally, the new literature has also demonstrated that in most cases we are much better off focusing on "the effect of a cause" than "causes of an effect."

The purpose of the course is to give students an overview/introduction to this new literature. The focus will be on conceptual understanding and empirical applications. The course assumes that individuals have at least taken a full semester course in regression analysis. The course should benefit not only students planning to do quantitative empirical work, but students involved in

qualitative, comparative, or historical research. Causal inference is an issue for all of these methods.

Course syllabus: Class 1: Introduction Chapter 1, Morgan and Winship

- Class 2: The Potential Outcome Model Chapter 2, Morgan and Winship
- Class 3: Directed Acyclic Graphs I (DAGS) Chapter 3, Morgan and Winship Elwert and Winship, unpublished. "Endogenous Selection", unpublished.
- Class 4: Matching I: Propensity Scores Chapter 4, Morgan and Winship
- Class 5: Match II: Coarsened Matching King et al. "Coarsened Matching"
- Class 6: Regression as a Causal Model Morgan and Winship, Chapter 5
- Class 7: Partial Identification and Bounds Analysis Morgan and Winship, Chapter 6
- Class 8: Instrumental Variables I Chapter 7.1 – 7.3, Morgan and Winship
- Class 9: Instrumental Variables II Chapter 7.4 – 7.6, Morgan and Winship
- Class 10: Causal Mechanisms Chapter 8, Morgan and Winship Knight and Winship, "Assessing the Causal Implications of Mechanistic Thinking"
- Class 11: Repeated Observations Chapter 9, Morgan and Winship
- Class 12: Reprisal of the Counterfactual Causal Model Chapter 10, Morgan and Winship

# **Prerequisites:**

Background and familiarity with regression analysis. Previous knowledge about structural equation modeling is helpful, but not necessary.