Content overview:

Survey methodology research sets out to answer questions regarding the effects of particular design decisions: do self-administered modes increase the reports of socially undesirable behavior? Does the use of incentives increase response rates? Does dependent interviewing decrease seam-effects? Do the employment rate estimates change with adding additional response categories like “maternity leave”? This course teaches the fundamental concepts behind the estimation of causal effects, including potential obstacles to causal inference, faulty measurement, spuriousness, specification errors, and other problems that can lead to inappropriate causal inferences. We will discuss the benefits and the difficulties of randomization in survey research in the first half of the class. The focus of the second half is on the design of observational studies and inferences from prediction. Real-world examples will be discussed, with an emphasis on examples from survey methodology. Students will come away with an understanding of how to estimate causal effects in both randomized and observational settings, with a particular focus on careful design of both types of studies.

Class Structure and Course Concept:
This is an online course using a flipped classroom design. It covers the same material and content as an on-site course but runs differently. In this course, you are responsible for watching video recorded lectures and reading the required literature for each unit and then “attending” one-hour online meetings (see schedule below) where students have the chance to discuss the materials from a unit with the instructor. There will be quizzes and homework to practice the material, and a final exam at the end of the course.

Although this is an online course where students have more freedom in when they engage with the course materials, students are expected to spend the same amount of time overall on all activities in the course – including preparatory activities (readings, studying), in-class-activities (watching videos, participating in online meetings), and follow-up activities (working on assignments) – as in an on-site course.

Online Meetings:
In preparation for the online meetings, students are expected to watch the lecture videos and read the assigned literature before the start of the meeting. In addition, students are encouraged to e-mail questions about the materials covered in the videos and readings of the week to the instructor before the meetings.

Grading
Grading will be based on:
• Participation in discussion during the online meetings and submission of questions via e-mail (deadline: day before class) demonstrating understanding of the required readings and video lectures
• Homework assignments
• Final exam

Technical Equipment Needs:
The learning experience in this course will mainly rely on the online interaction between students and the instructor during the online meetings. Therefore we encourage all students in this course to use a Web camera and a headset. We ask students to refrain from using built-in speakers on their desktops or laptops. We know from our experience in previous online courses that this will create feedback issues and will decrease the overall learning experience for all students in the course. In addition, we suggest that students use wire connection (LAN), if available, when connecting to the online meetings. Wireless connections (WLAN) are usually less stable and might be dropped.

D. Textbooks

Recommended Textbooks


Rosenbaum, PR (2010). Design of Observational Studies. Springer

For the computing part:


E. Class Outline

Unit 1 +2 Introduction to the course. Defining causal effects. Basic assumptions. Theories, models and paradigms. Formulating and testing hypotheses

Unit 3+4 Randomized Experiments Factorial Designs, Crossed vs. Nested Designs, Adaptive Designs
Unit 5 + 6  Criteria to evaluate research designs
Statistical Conclusion Validity + Internal Validity
Construct Validity and External Validity

Unit 7  Practical Problems
Ethics, Random Assignment, Broken Random Assignments, Attrition

Unit 8 + 9  Quasi-Experimental Designs
Control Groups, Pre-Post Tests,

Unit 10 + 11  Propensity Scores, Matching, Regression Discontinuity Design

Unit 12 + 13  Review of Design Principles: Review and Discussion
Meta-Analysis

Final Exam
Unit 1 +2
How can we formulate valid arguments? How can/should we formulate testable hypotheses? How can we re-formulate questions or statements about the world into testable hypotheses? What translations are necessary to get from general theory to study design? Are the translations what we think they are? Why do we need hypothesis?


Unit 3 +4
Classical randomized experiments, Complete and Incomplete Block Design, Factorial Design. Latin-Square. Crossed vs. Nested Factors … What are potential outcomes? What is the stable unit treatment value assumption (SUTVA) and why do we need to make this assumption? What is the assignment mechanism?


Unit 5 + 6 Criteria to evaluate research designs
Statistical Conclusion Validity + Internal Validity
Construct Validity and External Validity


Unit 7 Practical Problems
Ethics, Random Assignment, Broken Random Assignments, Attrition


Unit 8 + 9 Quasi-Experimental Designs
Control Groups, Pre-Post Tests,

T.B.D

Unit 10 + 11 Propensity Scores, Matching, Regression Discontinuity Design


*Depending on your software of choice, read and work through one of the following 2:

1) For computing in R:
2) Stata:


Unit 12 + 13 Review of Design Principles: Review and Discussion
Meta-Analysis