

## SYLLABUS

**Course title:** LAB AND FIELD EXPERIMENTS

**Instructor:** Prof. Isabelle ENGELER

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**Course website:** Moodle

**Semester:** Autumn 2024

**Timetable:** Thursdays 9:00 - 13:00 (from Oct 31, 2024 until Dec 12, 2024)

**Credits:** 3.0

**Prerequisites:** A basic understanding of programming languages and statistics is helpful but not required.

**Registration procedure:**

Sign-up for the course by sending an e-mail to [benedicte.moreira@unil.ch](mailto:benedicte.moreira@unil.ch)

### GENERAL DESCRIPTION OF THE COURSE

The objective of this course is to provide students with an understanding of causality in empirical research, and why experiments are so useful to uncover causal relationships. It is tailored for PhD students with an interest in doing research in areas such as behavioral economics, consumer behavior, organizational behavior, strategy and (business) policy evaluation.

The course covers the construction of experimental designs in the lab and field, the development of experimental tasks and stimuli, how to avoid confounds and other threats to validity, procedural aspects of administering experiments, and the analysis of experimental data. We will replicate published research to give you hands-on experience in applying the methods covered in the course.

Sessions are conducted in an interactive seminar format, with extensive discussion of concrete examples, challenges, and solutions.

### LEARNING OBJECTIVES

After completing this course, you will be able to:

- Understand the importance of experiments in establishing causal relationships
- Understand the importance of reproducibility and validity in experimental research
- Develop rigorous experimental designs that minimize confounds and other threats to internal and external validity.
- Run experiments, including variable selection for hypothesis test, operationalization of variables into stimuli and survey questions, pre-registration, and use of crowdsourcing platforms for data collection.
- Effectively analyze, interpret, report, and present experimental findings and assess the generalizability of results.

These objectives are designed to provide a comprehensive understanding of the experimental research process, from design and analysis to the interpretation and communication of results.

## ASSESSMENTS AND GRADING POLICY

Weekly readings and homework are a prerequisite to passing the course. The final grade consists of one group assignments and two individual assessments.

40% Empirical replication of a recently published experiment (group work)

30% In-class participation (individual work)

30% In-class presentation of assigned readings (individual work)

## RETAKE ASSESSMENT

Re-examination procedure: Students can redo failed assessments. The resits will be during the official resit examination period. The group class-room assignments can be redone individually, which will be evaluated with an oral presentation. The grade after resits will be calculated on the assessments that are redone along with the assessments that are not redone as per weighting scheme of the original syllabus.

## COURSE INFORMATION PER SESSION

### Session 8 (October 31, 2024): Intro to experimental research

Content:

- Introduction to scientific inquiry
- Why experiments?
- Experimental research process and causal inference
- Reproducibility of experimental research
- Introduction to replication group project / IRB

Required Application Readings:

- O'Donnell, M., Dev, A. S., Antonoplis, S., Baum, S. M., Benedetti, A. H., Brown, N. D., ... & Nelson, L. D. (2021). Empirical audit and review and an assessment of evidentiary value in research on the psychological consequences of scarcity. *Proceedings of the National Academy of Sciences*, 118(44), e2103313118. (→ skim only, you just need to get the gist of what they do and how)

Required Topic Readings:

- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin Company. (→ read only p. 1-18, intro to experimental research)
- Nelson, L. D., Simmons, J., & Simonsohn, U. (2018). Psychology's renaissance. *Annual Review of Psychology*, 69, 511-534.
- Brandt, M., IJzerman, H., Dijksterhuis, A., Farach, F., Geller, J., Giner-Sorolla, R., Grange, J., Perugini, M., Spies, J., & Veer, A. (2014). The Replication Recipe: What Makes for a Convincing Replication? *Journal of Experimental Social Psychology*, 50, 217–224.
- Gray, K., & Wegner, D. M. (2013). Six guidelines for interesting research. *Perspectives on Psychological Science*, 8(5), 549-553. (→ skim only)

Optional Topic Readings:

- Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific utopia II: Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science*, 7(6), 615–631.

### Session 9 (November 7, 2024): Design your experiment I

Content:

- Types of experiments: laboratory and field
- Types of experimental designs and paradigms
- Types of variables

- Main effect studies

#### Required Application Readings:

- Engeler, I., & Barasz, K. (2021). From Mix-and-Match to Head-to-Toe: How Brand Combinations Affect Observer Trust. *Journal of Consumer Research*, 48(4), 562-585.  
(→ read Intro, conceptual framework, and studies 1A-1C and discussion thereof)
- Belmi, P., Jun, S., & Adams, G. S. (2022). The “Equal-Opportunity Jerk” Defense: Rudeness Can Obfuscate Gender Bias. *Psychological Science*, 33(3), 397-411.  
(→ skim Intro and Studies 1 and 2 only)
- Milkman, K. L., Gandhi, L., Patel, M. S., Graci, H. N., Gromet, D. M., Ho, H., ... & Duckworth, A. L. (2022). A 680,000-person megastudy of nudges to encourage vaccination in pharmacies. *Proceedings of the National Academy of Sciences*, 119(6), 1-6.  
(→ skim only; have a look at the different experimental conditions tested)

#### Required Topic Readings:

- Christensen, L. (2012). Types of designs using random assignment.
- Falk, A., & Heckman, J. J. (2009). Lab experiments are a major source of knowledge in the social sciences. *Science*, 326(5952), 535-538.
- List, J. A. (2011). Why economists should conduct field experiments and 14 tips for pulling one off. *Journal of Economic Perspectives*, 25(3), 3-16.
- Lonati, S., Quiroga, B. F., Zehnder, C., & Antonakis, J. (2018). On doing relevant and rigorous experiments: Review and recommendations. *Journal of Operations Management*, 64, 19-40.  
(→ read chapter 1-3 & 6, skim chapter 4, and skip chapter 5)

#### Optional Topic Readings:

- Hertwig, R., & Ortmann, A. (2001). Experimental practices in economics: A methodological challenge for psychologists?. *Behavioral and Brain Sciences*, 24(3), 383-403.
- Eden, D. (2017). Field experiments in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 4, 91-122.
- Mislavsky, R., Dietvorst, B., & Simonsohn, U. (2020). Critical Condition: People Don't Dislike a Corporate Experiment More Than They Dislike Its Worst Condition. *Marketing Science*, 39(6), 1092–1104. (→ read abstract, skim rest, get the gist)
- Datacolada [85] Data Replicada #4: The Problem of Hidden Confounds <http://datacolada.org/85>
- Datacolada [89] Data Replicada #6: The Problem of (Weird) Differential Attrition <http://datacolada.org/89>

## Session 10 (November 14, 2024): Design your experiment II

### Content:

- Moderation / Interaction effects
- How do we assess psychological mechanisms?
- How do we assess boundary conditions?
- Preregistration

### Required Application Readings:

- Engeler, I., & Barasz, K. (2021). From Mix-and-Match to Head-to-Toe: How Brand Combinations Affect Observer Trust. *Journal of Consumer Research*, 48(4), 562-585.  
(→ read studies 2A, 2B, and 3)

### Required Topic Readings:

- Spiller, S. A., Fitzsimons, G. J., Lynch Jr, J. G., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. *Journal of Marketing Research*, 50(2), 277-288.
- Spencer, S., Zanna, S., & Fong, G. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89, 845-851.
- Goldstein, D. (2022). Leveling Up Applied Behavioral Economics. In A. Samson (Ed.), *The Behavioral Economics Guide 2022* (pp. 6-18). <https://www.behavioraleconomics.com/be-guide/>
- Datacolada [17] No-way Interactions <http://datacolada.org/17>

### Optional Topic Readings:

- Bullock, J. G., & Green, D. P. (2021). The failings of conventional mediation analysis and a design-based alternative. *Advances in Methods and Practices in Psychological Science*, 4(4), 25152459211047227.
- Van't Veer, A. E., & Giner-Sorolla, R. (2016). Pre-registration in social psychology—A discussion and suggested template. *Journal of Experimental Social Psychology*, 67, 2-12.

## Session 11 (November 21, 2024): Set up your experiment

### Content:

- Why randomization?
- What are confound?
- Why and how to pre-register?
- Effect size and power

### Required Topic Readings:

- Simmons, J., Nelson, L., & Simonsohn, U. (2021). Pre-registration: Why and How. *Journal of Consumer Psychology*, 31(1), 151-162.
- Pham, M. T., & Oh, T. T. (2021). Preregistration is neither sufficient nor necessary for good science. *Journal of Consumer Psychology*, 31(1), 163-176.
- Meyvis, T., & Van Osselaer, S. M. (2018). Increasing the power of your study by increasing the effect size. *Journal of Consumer Research*, 44(5), 1157-1173.
- Landy, J. F., Jia, M. L., Ding, I. L., Viganola, D., Tierney, W., Dreber, A., ... & Ly, A. (2020). Crowdsourcing hypothesis tests: Making transparent how design choices shape research results. *Psychological Bulletin*. 146(5), 451-479.
- Datacolada [33] "The" Effect Size Does Not Exist <http://datacolada.org/33>

### Session 12 (November 28, 2024): Run your experiment

#### Content:

- Data collection
- Introduction to crowd sourcing platforms
- Dos and Don'ts of running experiments
- Visit of HEC-LABEX

#### Required Topic Readings:

- Zallot, C., Paolacci, G., Chandler, J., & Sisso, I. (2021). Crowdsourcing in observational and experimental research. In *Handbook of Computational Social Science, Volume 2* (pp. 140-157). Routledge.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, 466(7302), 29-29.

### Session 13 (December 5, 2024): Analyze your experiment

#### Content:

- How to analyze experiments?
- Understanding how to use and interpret p-values
- P-curve analysis
- Primer on meta-analysis

#### Required Topic Readings:

- Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: a key to the file-drawer. *Journal of Experimental Psychology: General*, 143(2), 534-547. (→ only read until/without “A Demonstration”)
- Vosgerau, J., Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2019). 99% impossible: A valid, or falsifiable, internal meta-analysis. *Journal of Experimental Psychology: General*, 148(9), 1628-1639.
- Datacolada [55] The file-drawer problem is unfixable, and that's OK <http://datacolada.org/55>
- Vazire, S., Schiavone, S. R., & Bottesini, J. G. (2022). Credibility Beyond Replicability: Improving the Four Validities in Psychological Science. *Current Directions in Psychological Science*, 31(2), 162–168.
- Lakens, D. (2022). Improving Your Statistical Inferences. Retrieved from [https://lakens.github.io/statistical\\_inferences/01-pvalue.html#sec-misconceptions](https://lakens.github.io/statistical_inferences/01-pvalue.html#sec-misconceptions) (→ read only chapter 1 “Using p-values to test a hypothesis”)

#### Optional Topic Readings:

- Cumming, G. (2014). The new statistics: Why and how. *Psychological Science*, 25(1), 7-29.

**Session 14 (December 12, 2024): Interpret, report, and present your experiment**

Content:

- How to interpret and report experiments?
- How to present experimental results?
- Generalizability of results
- Presentation of replication project results

Required Topic Readings:

- Simonsohn, U. (2015). Small Telescopes: Detectability and the Evaluation of Replication Results. *Psychological Science*, 26(5), 559–569.
- Gernsbacher, M. A. (2018). Writing empirical articles: Transparency, reproducibility, clarity, and memorability. *Advances in Methods and Practices in Psychological Science*, 1(3), 403-414.
- Zhang, S., Heck, P. R., Meyer, M. N., Chabris, C. F., Goldstein, D. G., & Hofman, J. M. (2022). An illusion of predictability in scientific results. *SocArXiv, preprint, submitted September, 29*.  
<http://jakehofman.com/pdfs/illusion-of-predictability.pdf>
- Larkin, M. (2015). How to give a dynamic scientific presentation. [Link](#)

Optional Topic Readings:

- Highhouse, S. (2009). Designing Experiments That Generalize. *Organizational Research Methods*, 12(3), 554-566.

## READINGS

See section “COURSE INFORMATION PER SESSION”