all videos: [The Path from Cause to Effect | Marginal Revolution University (mru.org)](https://mru.org/courses/mastering-econometrics/path-cause-effect)

| Sessions and contents | Required reading |  |
| --- | --- | --- |
| Session 1: Introduction   * Overview of the course * Assignment requirements * An introduction to causality (Rubin’s potential outcome framework, maybe Hill and Pearl stuff) | Shadish, Cook, & Campbell, 2002, chapter 1 | Isa |
| Session 2: Designing Experiments   * Designing experiments: principles and elements * Issues of causal mechanisms, generalizability, ecological validity, etc. * Limitations and validity threats in experimental designs in education () * Include video [Econometrics: The Path from Cause to Effect - YouTube](https://www.youtube.com/watch?v=WwW8y5dZs80)   Find a good source (maybe in book?) | Shadish, Cook, & Campbell, 2002, chapter 8 | Isa |
| Session 3: Randomized trials I   * Discuss Mastering Metrics chapter 1 (include video [Randomized Trials: The Ideal Weapon - YouTube](https://www.youtube.com/watch?v=eGRd8jBdNYg)) * Summarize an example study from field of education and discuss it critically; maybe military academy example; STAR example? | Angrist & Pischke, 2015, chapter 1 | José |
| Session 4: Randomized trials II   * Repetition of design principles and core elements of randomized trials * Extended exercise: students develop own experiment in small groups * Group discussion: why are randomized trials not always feasible? * maybe include [How to Read Economics Research Papers: Randomized Controlled Trials (RCTs) - YouTube](https://www.youtube.com/watch?v=s-_3s3OMeqs)   No required reading? Or critical paper/chapter? maybe chapter out of Shadish et al (<https://www.alnap.org/system/files/content/resource/files/main/147.pdf>) | Shadish, Cook, & Campbell, 2002, chapter 9? | José |
| Session 5: Regression models   * Discuss Mastering Metrics chapter 2 * Discuss omitted variable bias; [Selection Bias: Will You Make More Going to a Private University? - YouTube](https://www.youtube.com/watch?v=6YrIDhaUQOE) * discuss balance checks * Summarize and critically discuss an example study from field of education; maybe public vs. private schools; grade repetition | Angrist & Pischke, 2015, chapter 2 | Isa |
| Session 6: Further control strategies   * Special case of longitudinal regression models; example study; SESI study (Steinmann, Strietholt, & Caro, 2019) * Special case of (simple) fixed-effects regression models; SESI study * Special case of propensity score matching; Kindergarten example study (Hogrebe & Strietholt, 2016) * <https://us.sagepub.com/en-us/nam/fixed-effects-regression-models/book226025>; <https://methods.sagepub.com/book/longitudinal-research> | - | Isa |
| Session 7: Instrumental variable approaches   * Discuss Mastering Metrics chapter 3 * Discuss an example study (from field of education) critically * Conclusion should be that good instruments are rare | Angrist & Pischke, 2015, chapter 3 | José |
| Session 8: Regression discontinuity designs I   * Discuss Mastering Metrics chapter 4 * discuss a study from field of education critically; class size?   Mastering Metrics chapter 4 | Angrist & Pischke, 2015, chapter 4 | José |
| Session 9: Regression discontinuity designs II   * discuss age vs. schooling study critically * Extended exercise with Norway 1995 example in R * Discuss requirements that have to be met (see Schochet et al., 2010) | Luyten, 2006 | Isa |
| Session 10: Differences-in-differences designs I   * Discuss Mastering Metrics chapter 5 * Discuss a study from field of education critically;   Mastering Metrics chapter 5  [Introduction to Differences-in-Differences | Marginal Revolution University (mru.org)](https://mru.org/courses/mastering-econometrics/introduction-differences-differences) | Angrist & Pischke, 2015, chapter 5 | Isa |
| Session 11: Differences-in-differences designs II   * discuss Andrés’ study (Strello, Strietholt, Steinmann & Siepmann, 2021) * R exercise on early tracking effects * discuss requirements that have to be met (look at what works clearinghouse (WWC) handbook) | Strello, Strietholt, Steinmann, & Siepmann, 2021 | Isa |
| Session 12: Lessons learned and closing   * Overview of central take-away messages (correlation ≠ causation) * Discussion of assignment requirements * Feedback and closing   [What's the Difference between Econometrics and Data Science? | Marginal Revolution University (mru.org)](https://mru.org/courses/mastering-econometrics/whats-difference-between-econometrics-and-data-science)  [What's the Difference between Econometrics and Statistics? | Marginal Revolution University (mru.org)](https://mru.org/courses/mastering-econometrics/whats-difference-between-econometrics-and-statistics) | Rutkowski & Delandshere, 2016 | Isa |

## **Reading List**

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| --- | --- |
| Session 1: Introduction | Shadish, Cook, & Campbell, 2002, chapter 1 (freely available online):  <https://www.alnap.org/system/files/content/resource/files/main/147.pdf> |
| Session 2: Designing Experiments | Shadish, Cook, & Campbell, 2002, chapter 8 (freely available online):  <https://www.alnap.org/system/files/content/resource/files/main/147.pdf> |
| Session 3: Randomized trials I | Angrist & Pischke, 2015, chapter 1  [**https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm\_pap\_swatch\_0?\_encoding=UTF8&sr=8-1&qid=1417559231**](https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm_pap_swatch_0?_encoding=UTF8&sr=8-1&qid=1417559231) |
| Session 4: Randomized trials II | Shadish, Cook, & Campbell, 2002, chapter 9 (freely available online):  <https://www.alnap.org/system/files/content/resource/files/main/147.pdf> |
| Session 5: Regression models | Angrist & Pischke, 2015, chapter 2  [**https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm\_pap\_swatch\_0?\_encoding=UTF8&sr=8-1&qid=1417559231**](https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm_pap_swatch_0?_encoding=UTF8&sr=8-1&qid=1417559231) |
| Session 6: Further control strategies | - |
| Session 7: Instrumental variable approaches | Angrist & Pischke, 2015, chapter 3  [**https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm\_pap\_swatch\_0?\_encoding=UTF8&sr=8-1&qid=1417559231**](https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm_pap_swatch_0?_encoding=UTF8&sr=8-1&qid=1417559231) |
| Session 8: Regression discontinuity designs I | Angrist & Pischke, 2015, chapter 4  [**https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm\_pap\_swatch\_0?\_encoding=UTF8&sr=8-1&qid=1417559231**](https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm_pap_swatch_0?_encoding=UTF8&sr=8-1&qid=1417559231) |
| Session 9: Regression discontinuity designs II | Luyten, 2006 (freely available online):  <http://dx.doi.org/10.1080/03054980600776589> |
| Session 10: Differences-in-differences designs I | Angrist & Pischke, 2015, chapter 5  [**https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm\_pap\_swatch\_0?\_encoding=UTF8&sr=8-1&qid=1417559231**](https://www.amazon.com/Mastering-Metrics-Path-Cause-Effect/dp/0691152845/ref=tmm_pap_swatch_0?_encoding=UTF8&sr=8-1&qid=1417559231) |
| Session 11: Differences-in-differences designs II | Strello, Strietholt, Steinmann, & Siepmann, 2021 (freely available online):  <https://doi.org/10.1007/s11092-020-09346-4> |
| Session 12: Lessons learned and closing | Rutkowski & Delandshere, 2016 (freely available online):  <https://doi.org/10.1186/s40536-016-0019-1> |

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