

**Introduction to Causal Inference and
Causal Data Science**

Programme can be subject to alteration

Course Director: Oisín Ryan

Monday July 6th: Introduction & Potential Outcomes		
Time	Activity	Description
09:00 – 09:30	Introduction	Causal Inference and Causal Data Science: What, Why and How
09:30– 10:45	Lecture 1	Potential Outcomes I
11:00 - 12:00	Practical 1	Practical: Causal Assumptions and Data
12:00 – 13:00	Lunch	
13:00 – 14:00	Lecture 2	Potential Outcomes II
14:15 – 15:00	Lecture 3	Adjustment Methods I: Stratification and Matching
15:15 – 16:30	Practical 2	Practical: Potential Outcomes and Adjustment

Tuesday July 7th: Directed Acyclic Graphs		
Time	Activity	Description
09:00 – 09:45	Lecture 4	Directed Acyclic Graphs I
10:00 – 10:45	Lecture 5	Directed Acyclic Graphs II
11:00 - 12:00	Practical 3	Practical: Drawing and using DAGs I
12:00 – 13:00	Lunch	
13:00 – 14:00	Lecture 6	Directed Acyclic Graphs III
14:15 – 15:00	Lecture 7	Adjustment Methods II: Regression and Outcome Modeling
15:15 – 16:30	Practical 4	Practical: Drawing and using DAGs II

Wednesday July 8th: Target Trial Emulation & Causal Inference in practice		
Time	Activity	Description
09:00 – 09:45	Lecture 8	Target Trial Emulation I
10:00 – 10:45	Lecture 9	Target Trial Emulation II
11:00 - 12:00	Practical 5	Practical: Target Trials in Practice I
12:00 – 13:00	Lunch	
13:00 – 14:00	Lecture 10	Target Trial Emulation III
14:15 – 15:00	Lecture 11	Adjustment Methods III: Inverse Probability Weights and “G-methods”

15:15 – 16:30	Practical 6	Practical: Target Trials in Practice II
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**Thursday July 9th:
Causal Data Science**

Time	Activity	Description
09:00 – 09:45	Lecture 12	Causal Perspectives on Prediction Modeling I
10:00 – 10:45	Lecture 13	Causal Perspectives on Prediction Modeling II
11:00 - 12:00	Practical 7	Practical: Causal Perspective on Prediction Modeling
12:00 – 13:00	Lunch	
13:00 – 14:00	Lecture 14	Causal Structure Learning I
14:15 – 15:00	Lecture 15	Causal Structure Learning II
15:15 – 16:30	Practical 8	Practical: Causal Structure Learning

**Friday July 10th:
Advanced Topics**

Time	Activity	Description
09:00 – 10:00	Lecture 16	Mediation, Instrumental Variables and Longitudinal DAGs
10:15 - 11:45	Group Work	Design your own causal research project
12:00 – 12:30	Lunch	
12.30- 13.30	Group Work	Discuss causal research projects
13.30 - 14.00	Lecture 17	Discussion and Q&A

