DoSS Summer Prep Bootcamp 2022
Methods and Computing

1 Time & Place

TBD

2 Instructor

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3 Course Outline

Review of basic programming in R and simulation computational techniques. Review of essentials of likelihood inference.

4 Textbooks

Primary textbooks:

All of Statistics by L. Wasserman (AoS)
Statistical Inference by George Casella and Robert L. Berger (C&B)

Optional texts:

Statistical Models by A.C. Davison
Mathematical Statistics by K. Knight
Theory of Point Estimation by E.L. Lehmann

5 Tentative Lecture Schedule

The lecture topics and corresponding chapters in the texts (if applicable) are outlined below. This schedule is tentative and will inevitably be augmented during the course.

Module	Topics	References
1	R, Rstudio, and Rmarkdown Basic data types and structures	-
2	Reporting, data wrangling and graphing (I) `LaTeX`, `tidyverse`, and `ggplot`	-
3	Reporting, data wrangling and graphing (II) Elementary data analysis Git and Github	-
4	Probability distributions Statistical inference (I) Fundamental concepts in inference	AoS Chp 1-5 AoS Chp 6
5	Statistical inference (II) Maximum likelihood estimation	C&B Chp 6.3, 7 AoS Chp 3-4
6	Statistical inference (III) Hypothesis testing	AoS Chp 8 C&B Chap 8
7	Simulation techniques	C&B Chap 10 AoS Chp 24
8	Bootstrap Cluster computing (`SLURM`)	AoS Chp 5
9	Statistical models (I) Linear regression models	AoS Chp 13 C&B Chp 11
10 [1]	Statistical models (II) Generalized linear models	C&B Chp 12 AoS Chp 13

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[1]If time permits, we will cover this module