

Methods and Computing

DoSS Summer Prep Bootcamp 2026

1 Time and Place

Exact times TBA

2 Instructor

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3 Course outline

This course will revisit foundational programming principles in R and review essential concepts in likelihood inference.

4 Textbooks

4.1 Primary Textbooks

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

4.2 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 texts are outlined below. This schedule is tentative and may be changed as the course progresses.

Module	Topics	References
1	R, Rstudio, and Rmarkdown; Basic data types and structures	-
2	Reporting, data wrangling and graphing (I); LaTeX, <code>tidyverse</code>	-
3	Reporting, data wrangling and graphing (II); Elementary data analysis; <code>ggplot</code> and R style guide	-
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	Statistical models (I); Linear regression models	AoS Chp 13; C&B Chp 11
8	Statistical models (II); Generalized linear models	C&B Chp 12; AoS Chp 13
9	Simulation and parallel computing	C&B Chap 10; AoS Chp 24
10	Bootstrap	AoS Chp 5