

STA 2212S: Statistical Theory for Data Science
Tuesday, 5.10pm - 8.00pm

January 6 – March 31 2026

Course description (new!)

This course is a continuation of STA2112H. It is designed for graduate students in statistics and biostatistics. Topics include: Likelihood and Bayesian inference, theory of point estimation, hypothesis and significance testing, inference with missing data, causal inference, estimation and testing for high-dimensional data.

Prerequisite: STA2112H

Course content

The [course Quercus page](#) has

- A regularly updated syllabus
- Lecture notes
- Discussion pages on [Piazza](#)
- Electronic copies of source texts

Grading The midterm questions will be taken from the weekly HW questions (which will be assigned but not graded).

- Midterm 1 Feb 3 in class, 7pm-8pm 20%
- Midterm 2 Mar 3 in class, 7pm-8pm 30%
- Presentation Mar 31 in class 10%
- Report on presentation due Apr 15 30%
- Class participation (attendance and questions) 10%

Contact Nancy Reid: nancym.reid@utoronto.ca

Office Hours Monday 7-8 pm (Zoom), and Tuesday 3-4 pm (Hydro Building 9124)

Teaching Assistant Kathleen Miao k.miao@mail.utoronto.ca

Texts:

Posted on Quercus page under Modules

****AoS** Wasserman, L. (2004). *All of Statistics*. Springer-Verlag, NY. [Chapters 6–11, 16–17, 21]

***LaE** Reid, N., Varin, C. and Yi, G. (2026) *Likelihood and its Extensions*. [Chapters 1, 2, parts of 4, 6, 7]

SM Davison, A.C. (2003). *Statistical Models*. Cambridge University Press, Cambridge. [Chapters 4, 7, 11]

MS Knight, K. (1999). *Mathematical Statistics*. Chapman & Hall/CRC. [Chapters 4–7]

Helpful References:

EH Efron, B. and Hastie, T. (2016). *Computer Age Statistical Inference*. Cambridge University Press, Cambridge.

CB Casella, G. and Berger, R.L. (2001). *Statistical Inference*. 2nd edition. Springer, New York.

Academic Integrity:

The University of Toronto's Code of Behaviour on Academic Matters is available at <http://academicintegrity.utoronto.ca>.

You can use LLMs as a search engine for information about the subject of your project, but not to prepare the project slides or report. I will not deduct marks for grammatical errors.