

STA365H1 S

Applied Bayesian Statistics

Winter 2025 Syllabus

Course Meetings

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Section	Day & Time	Delivery Mode & Location
LEC0101	Wednesday, 3:00 PM - 6:00 PM	In Person: MB 128

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Course Contacts

Course Website: <https://q.utoronto.ca/courses/380376>

Instructor: Scott Schwartz

Email: scott.schwartz@utoronto.ca

Office Hours and Location: 4:00-6PM Friday Hybrid <https://utoronto.zoom.us/j/2910373742>
with in person location TBA

Additional Notes: All course communication will take place through the course piazza discussion board unless otherwise directed: <https://piazza.com/class/m5jvyco84083fm>
(<https://piazza.com/utoronto.ca/winter2025/sta365>)

Course Overview

Bayesian inference has become an important applied technique and is especially valued to solve complex problems. This course first examines the basics of Bayesian inference. From there, this course looks at modern, computational methods and how to make inferences on complex data problems.

Jan 08: Bayes Theorem, Beta-Binomial; Dirichlet-Multinomial (3)

Jan 15: Monte Carlo integration, `for` loops; Bayesian Bandit (3)

Jan 22: Normal-Normal, Gamma-Normal-Normal; Gibbs Sampling (3)

Jan 29: Metropolis-Hastings, priors; Metropolis-within-Gibbs (3) and Transition Matrices (3)

Feb 05: PyMC, model diagnostics; PyMC Sampling Assignment 1 (3)

Feb 12: Hamiltonian Monte Carlo

Feb 19: READING WEEK

Feb 26: MIDTERM (35)

Mar 05: Bayesian Linear Regression, GLMs; PyMC Modeling Assignment 2 (3)

Mar 12: Multivariate Normal Distributions, Linear Algebra; Multivariate Regression (3)

Mar 19: Inverse-Wishart, LKJ (Cholesky) priors; PyMC Computation Assignment 3 (3)

Mar 26: Mixture Models; PyMC Assignment 4 (3)

Apr 02: TBD

<https://github.com/pointOfive/STA365daysofbayes>

Marking Scheme

Assessment	Percent	Details	Due Date
Midterm Exam	35%		2025-02-26
Weekly Homework	30%		2025-01-08,2025-01-15,2025-01-22,2025-01-29,2025-02-05,2025-02-12,2025-03-05,2025-03-12,2025-03-19,2025-03-26
In-Person Final Exam	35%		Final Exam Period

A makeup midterm exam will be offered on Monday February 28th for any students who missed the midterm exam due to standard university approved exceptions. The points for students also missing the makeup exam will be transferred to the final exam, making the final exam worth 70 points.

Late Assessment Submissions Policy

HW may be submitted up to 9 days late for a 50% penalty, or no penalty for standard university approved exceptions.