Introduction to Bayesian Statistics - STAT 4XX/6XX

Spring 2019—AB 635—Mon,Wed 1:00pm - 2:15pm

Instructor:	A. Grant Schissler	**Contact**:	aschissler@unr.edu, 775-784-4661 (office)
Office:	DMSC 224	**Hours**:	Tue 2:30pm-3:30pm, Wed 1:30pm-2:30pm, or by appointment

Catalog Description

Statistical inference using Bayes Theorem. Topics include Bayesian/frequentist comparison, posterior analysis for continuous and discrete random variables, prior specification, Bayesian regression, multivariate inference, and posterior sampling through Markov Chain Monte Carlo.

Broad student learning outcomes

UG1 Students will be able to demonstrate understanding of the concepts that underlie Bayesian inference and compare the results to frequentist alternatives.

UG2 Students will be able to conduct Bayesian inference analytically and interpret the results.

UG3 Students will be able to perform a Bayesian analysis using professional statistical packages (e.g., Minitab, R, and Stan).

GRAD1 Students will be able to synthesize course concepts to apply Bayesian modeling techniques to real-world data in the pursuit of scientific inquiry.

Learning outcomes

Students will be able to ...

1. recall the axioms, basic terms/algebra of probability, including Bayes' Theorem.
2. model parameters and data using discrete and continuous random variables.
3. conduct Bayesian inference for parameters of discrete and continuous random variables.
4. conduct Bayesian inference parameters in linear regression.
5. apply computational techniques to conduct Bayesian inference, including Markov Chain Monte Carlo.
6. compare Frequentist/Bayesian approaches in statistical inference.
7. develop and evaluate a Bayesian model for real world data.