University of Oklahoma
DSA 5403: Bayesian Statistics
Course Syllabus
Spring 2022 – 3 credit hours

Instructor
Dr. Wayne Stewart
Email: wayne.s.stewart@ou.edu
Office Hours: via Zoom: Times to be announced in the first week of the course
Zoom Address: See ZOOM page

Teaching Assistant
Rachana Vellampalli
Email: rachana@ou.edu
Office Hours: via Zoom:
Wednesday 10:30 AM-12:00PM
Zoom link:
https://oklahoma.zoom.us/j/94517279347?pwd=VzB0UFhWNmxRWitROHVndDRmMndhZz09
Meeting ID: 945 1727 9347
Passcode: 80356181

Learning Management System: https://canvas.ou.edu/

Course Meeting Time and Location
Fully online. See course schedule. https://canvas.ou.edu/courses/200607/assignments/syllabus

Course Prerequisite
For students enrolled in MS in DSA Program; all other students need special permission

There is no pre-requisite for this course but it would be beneficial to have Calc 2 and an undergraduate course on Stats

Course Description
This course will cover a basic introduction to modern Bayesian statistics. It develops from a summary of distributional theory and Bayes' theorem and then applies all the important aspects of Bayesian analysis to dichotomous data. After this advanced GLM modeling is introduced with an emphasis on Multiple Regression and Logistic regression.

Course Overview
This course contains 15 weekly units. The content is divided into three parts. Part I: The Basics, Part II: All the Fundamentals Applied to Inferring Binomial Probability and Part III: The Generalized Linear Model. Throughout the course, you will complete quizzes, assignments, lab exercises a mid-term and a final exam.

Texts:

Kruschke, J. 2015. *Doing Bayesian Data Analysis.*

A free online version of the book can be obtained from:
http://www.sciencedirect.com/science/book/9780124058880.

The textbook will be available on the CANVAS platform.

Materials
To be successful in this course, you will need the following hardware, software or web accounts:

- Access to a computer
- Zoom Account
- Jags
- STAN (New 2022)
- R
- RStudio
- Latex
- OpenBUGS (If you have a MAC – you will need to use WINE)
- GIT
- GITHUB account (free)
- Scanner or Scanning applications for the Final and perhaps mid term

Expectations
All assignments, quizzes, projects and exams must be completed or uploaded in the CANVAS system by the due date and time stipulated in the platform. Ensure your familiarity with the CANVAS system in advance, and allow enough time for assignment submission and any technical difficulties that may arise.

Assignments
There will be four assignments throughout the course. There will be one assignment on Part 1 material, two assignments on Part 2 material and one assignment on Part 3 material. The assignments are worth 40% (10% each) of your final grade in the course.

Quizzes
There will be a quiz in each lesson. The quizzes are worth 100 points each and make up 10% of your final grade. The quizzes are designed to test your knowledge from the readings.

Lab Exercises
There will be one lab per week. The labs will be available on Sundays. These Labs will be done in R Markdown and submitted each Friday by 1.00pm. The Lab Exercises will make up 10% of your final grade.

Discussions
Throughout the course, you will be asked to participate in Discussions. For example, you may be asked to watch a video and discuss its contents. Your discussion posts should be well-developed, respectful and contribute to the discussion in a positive way.

Exams
There are two exams. One mid-term exam and a FINAL. All exams are open book. You will be given 24 hours to answer the questions on each respective exam. Working must be shown and you will need to use your computer to carry out analyses. Make sure that all software related problems have been ironed out before exam time.

Course Grading
The course letter grade will be assigned based on the overall percentage: 90-100 (A), 80-89 (B), 60 -79 (C), 50-59 (D), and < 50 (F). The allocation of percentages is given below:

	Percentages
Assignments (4)	40
Quizzes (15)	10
Lab Exercises	10
Mid Term Exam	10
Final Exam	30

Course Policies

Late Policy
Late assignments will get a 0

Attendance
Since this is a fully online class, you are expected to view all materials and complete all readings throughout the course.

University Policies
Academic Integrity
Cheating is strictly prohibited at the University of Oklahoma, because it devalues the degree you are working hard to get. As a member of the OU community it is your responsibility to protect your educational investment by knowing and following the rules. For specific definitions on what constitutes cheating, review the Student's Guide to Academic Integrity at http://integrity.ou.edu/students_guide.html.

To be successful in this class, all work on exams and quizzes must be yours and yours alone. If you become aware of a fellow student engaging in suspicious behavior, I encourage you to report it to us or directly to the Office of Academic Integrity Programs. That student is devaluing not only their degree, but yours, too. Be aware that it is our professional obligation to report academic misconduct, which we will not hesitate to do. Sanctions for academic misconduct can

include expulsion from the University and an F in this course, so don't cheat. It's simply not worth it.

Religious Observance

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

Reasonable Accommodation Policy

Students requiring academic accommodation should contact the Disability Resource Center for assistance at (405) 325-3852 or TDD: (405) 325-4173. For more information please see the Disability Resource Center website http://www.ou.edu/drc/home.html Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Title IX Resources and Reporting Requirement

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on call 24/7. To learn more or to report an incident, please contact the Sexual Misconduct Office at 405-325-2215 (8 to 5, M-F) or OU Advocates at 405-615-0013 (24/7). Also, please be advised that a professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination to the Sexual Misconduct Office. For more information, please see http://www.ou.edu/eoo.

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact your professor or the Disability Resource Center at 405-325-3852 as soon as possible. Please see http://www.ou.edu/eoo/faqs/pregnancy-faqs.html for answers to commonly asked questions.

Tentative Course Schedule
See CANVAS for exact due dates!!
See OU calendar: https://www.ou.edu/registrar/academic-calendars/spring-2022-academic-calendar

Week (Mon)	Topic	Assigned
Jan. 17	**Welcome to the Course**	Lab Exercise 1 GIT
	Part I: Chapter 1 & 2ON	Assignments 1-4
Jan. 31	**Chapter 3**	Lab Exercise 2
Feb. 7	**Chapter 4**	Lab Exercise 3
Feb. 14	**Chapter 5**	Lab Exercise 4
Feb. 21	**Part II: Chapter 6**	Lab Exercise 5
Feb. 28	**Chapter 7**	Lab Exercise 6
Mar. 7	**Chapter 8**	Lab Exercise 7
Mar. 14	**Chapter 9**	Lab Exercise 8
	MIDTERM EXAM (24 HR)	On CANVAS
Mar. 21	**Chapter 10**	Lab Exercise 9
Mar. 28	**Chapter 11**	Lab Exercise 10
Apr. 4	**Chapter 12**	Lab Exercise 11
Apr. 11	**Chapter 13**	Lab Exercise 12
Apr. 18	**Part III: Chapter 15**	Lab Exercise 13
Apr. 25	**Chapter 18**	Lab Exercise 14
May 1	**Chapter 19**	Lab Exercise 15
May 6	**FINAL EXAM(24 HR)**	See CANVAS