George Mason University
Math 453/553
Course Syllabus

Term   Spring 2022
Title   Advanced Mathematical Statistics
Location   Aquia 213
Time   Wednesday evenings 7:20 – 09:55
Professor: Douglas Eckley
              deckley2@gmu.edu
              mobile #   571 277 7927 (use sparingly)
              office #   703 993 1682
              office hours 5 to 7pm on Tue, Wed, and Thu

Description

This course covers the basics of probability and statistical analysis. For those interested, it also helps the student prepare for the statistics-related professional exams in the Society of Actuaries and/or Casualty Actuarial Society sequences. This course will utilize the "R" programming language to some extent, and also will utilize large datasets to some extent.

You do not need to know anything about R prior to the first day of class. But you should have R installed on your PC prior to the second day of class. R is free to download.

The textbook is An Introduction to Statistical Learning with Applications in R by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani.

Procedures

Class will usually consist of a lecture (which I will try to remember to record) followed by a lab session. In the lab session, you will work hands-on in R to address a statistical problem.

Grading will be based on 100 marks divided as follows:

        Progress Exams (3)   60
        Final exam   40

Calendar

Date   Topic   Reference to Book

26-Jan   Intro to R   Ch 2

Date	Topic	Reading
02-Feb	Probability; Normal Distributions	Ch 3
09-Feb	Linear Regression	Ch 3
16-Feb	Logistic Regression	Ch 4 Section 3
23-Feb	Progress Exam 1	
02-Mar	Classification excluding Logistic Regression	Ch 4 Excluding Section 3
09-Mar	Resampling Methods	Ch 5
16-Mar	NO CLASS (spring break)	
23-Mar	Linear Model Selection and Regularization	Ch 6
30-Mar	Progress Exam 2	
06-Apr	Moving Beyond Linearity	Ch 7
13-Apr	Tree-Based Methods	Ch 8
20-Apr	Support Vector Machines	Ch 9
27-Apr	Progress Exam 3	
04-May	Review	
11-May	Final Exam	