

# Stat 345 Syllabus

*Spring 2019*

## STAT 345-002: ELEMENTS OF MATHEMATICAL STATISTICS AND PROBABILITY

**INSTRUCTOR:** Dr. Yan Lu, yanlu@unm.edu

**CLASS:** TTr 2:00pm-3:15pm, *Dane Smith Hall 127*

**OFFICE HOURS:** SMLC 316, TTr **11:00am-12:00pm or by appointment**

**WEB PAGE:** <http://www.math.unm.edu/~luyan/stat34519/stat34519.html>

**PREREQUISITES:** MATH 181 or MATH 163.

**TEXT:** *Applied Statistics and Probability for Engineers*, 6<sup>th</sup> Edition or 7<sup>th</sup> Edition by Douglas C. Montgomery and George C. Runger, John Wiley and Sons, Inc., 2018.

Student companion site is available at

[bcs.wiley.com/he-bcs/Books?action=index&itemId=1119400368&bcsId=10954](http://bcs.wiley.com/he-bcs/Books?action=index&itemId=1119400368&bcsId=10954)

You can find data sets etc on the website.

### **OBJECTIVES AND TOPICS:**

This course provides an introduction to probability theory and statistical inference. We will cover most of Chapters 2-5, and portions of Chapters 6-9. Chapters 2-5 concentrate on probability, including combinatorics, Bayes' theorem, probability distributions, expectation, variance and correlation. Chapters 6-9 introduce point estimation, confidence intervals, and hypothesis testing. This course has been designed for computer science and engineering students; however, it is broad enough for students from outside these disciplines.

### **EXAMS:**

Three midterm exams each counts for 25%, no final exam.

There will be three exams given during the semester. These exams will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for the exams is regular attendance and completion of assigned homework. Please note that **makeup exams are given at the discretion of the instructor and, in any case, only for verified medical or other emergency, which must be documented. The instructor must be contacted before the test is given.**

## ***HOMEWORK AND QUIZZES:***

Homework will be assigned and collected about every two weeks. Quizzes will be given once every two weeks. Homework and Quizzes count for 25%.

**GRADES:** A+: 98-100 A: 90-97 B: 80-89 C: 70-79 D: 60-69 E: <60

## ***Calculator and R:***

A calculator such as TI 83, TI 84 (or other types with basic probability and statistical functions such as mean, standard deviation, etc.) is required in this class.

R, Rstudio, and Rmarkdown will be used in this class. But you can use calculator if you want to.

R:<http://cran.r-project.org>

Rstudio:<https://www.rstudio.com/products/rstudio/download>

To see how to install R and Rstudio in windows, visit

<https://www.youtube.com/watch?v=eD07NznguA4>

for Mac

<https://www.youtube.com/watch?v=GFI mMj1IMRI>

R Markdown: <http://rmarkdown.rstudio.com>

## ***Accessibility:***

We will accommodate students with documented disabilities, through the UNM Accessibility Resource Center (ARC). During the first two weeks of the semester, those students should inform the instructor of their particular needs.

## ***Course Schedule:*** Tentative Course Outline

Week	Date	Section Covered	Notes
1	Jan 14-18	2.1-2.4	
2	Jan 21-25	2.5-2.7	Jan 21, Martin Luther king Jr day
3	Jan 28-Feb 1	2.8, 3.1	
4	Feb 4-Feb 8	3.2, 3.3, 3.4	
5	Feb 11-Feb 15	3.5, 3.6, 3.7, 3.8	
6	Feb 18-Feb 22	3.9, 4.1, 4.2,4.3	
7	Feb 25-Mar 1	Review	Test 1. Chapter 2, chapter 3
9	Mar 4-Mar 8	4.4, 4.5, 4.6, 4.7	
10	Mar 11-Mar 15		Spring Break
11	Mar 18-Mar 22	4.8, 5.1, 5.2, 5.3, 5.4	
12	Mar 25-Mar 29	6.1, 6.2, 6.3	

13	April 1-April 5	6.4, Review	
14	April 8- April 12	7.1, 7.2, 7.3	Test 2, Chapter 4 – Chapter 6
15	April 15- April 19	8.1, 8.2, 8.3	
16	April 22- April 26	9.1, 9.2, 9.3	
17	April 29- May 3	9.4, 9.5	
18	May 6- May 10	Review	Test 3, chapter 7-9
19			No final