MA506: Probability & Statistical Inference

Fall 2022

Instructor:	Prashant Shekhar, PhD	**Email:**	shekharp@erau.edu
Class Time:	M,W,F: 5:00pm – 5:50pm	**Class Venue:**	Bldg COAS Rm. 316
Office Hours (OH):	M,W,F: 1:00pm – 2:00pm	**OH Venue:**	Room 301.26, COAS.

Topics Included: This course will focus on using ideas from Probability and Statistics to solve problems in data science. The main topics included in the course are

1. Fundamentals of Statistical Learning

2. Regression

3. Classification

4. Statistical Model Selection

Why this course: The concepts that you learn in this course can be utilized to solve problems in the general area of machine learning and data science. The applications encompass multiple domains including healthcare, management, manufacturing, security and remote sensing etc.

Text Book: The course material will be provided to the students in the form of jupyter notebooks, pdfs and hand written notes. Additionally, the students can refer to the following textbooks to get a deeper understanding of the topics.

- An Introduction to Statistical Learning with Applications in R.

- Semiparametric Regression

- Elements of Statistical Learning

Attendance: I will try to take attendance in every class and I encourage you to participate in class activities. This is because attendance is found to be heavily correlated with the course grade and attending class everyday ensures that you will not miss any important announcement.

Grading: Your grade will be determined as:

- Homework: 40%

- Tests: 30%

- Final (Project and Presentation): 25%.

- Class participation and attendance: 5%

The grading is expected to follow the standard scale
A: 90% - 100%
B: 80% - 89.5%
C: 70% - 79.5%
D: 60% - 69.5%

F: <60%

However, based on the performance of the entire class, I might curve the grading scale later.

Homework: Your homework grade will be determined based on 4 programming oriented homeworks. You are required to use Python (Jupyter notebooks) to solve homework problems. These exercises will test the ability of the students to apply the concepts in statistical learning on various categories of data sets.

Tests: You will have 2 tests in the course. Make-ups on the test may be allowed only for valid extenuating circumstances when I am informed before the test takes place – please see me about conflicts as soon as they occur.

Final (Project and Presentation): During the semester, you will be supervised to work on a project which combines classroom materials and real-world applications. The project together with the presentation is the final deliverable for the course. It is supposed to be a group project with teams consisting of 2–4 students. I will work with each of the team separately to identify a topic of your interest and find a relevant project in that domain. In case you are already working on a research problem related to the topics discussed in class, that can also be considered. I will announce project guidelines and rubric in due course.

Academic Integrity: Embry-Riddle Aeronautical University maintains high standards of academic honesty and integrity in higher education. To preserve academic excellence and integrity, the University prohibits academic dishonesty in any form, including, but not limited to, cheating and plagiarism. More specific definitions of these violations and their consequences are described in the Dean of Students' Honor Codes and Student Policies.

Disability Services: DSS Administration Office: Bldg 500; Contact: (386) 226-7916; email: dbdss@erau.edu

- Student Disability Services: Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Office of Disability Services. Professors cannot make appropriate disability accommodations. Students are encouraged to register with DSS at the beginning of the term to better ensure that such accommodations are implemented in a timely fashion. Accommodations are not granted until official notice is received from DSS.

- It is the responsibility of the student to notify DSS the date and time of test once s/he has been made aware of the scheduled test. DSS requires: (a) 2 business days minimum notification for tests and quizzes and (b) 5 business days minimum notification for final exams. Professors cannot make appropriate testing modification without notification from DSS.