FSRM/MSDS 581
Probability and Statistical Inference
Fall 2021

Instructors: Sijian Wang, Ph.D.
Associate Professor, Departments of Statistics
Email: sijian.wang@stat.rutgers.edu
Office hour: 10-11am EST on Thursday, remotely
Office hour Zoom link:
https://rutgers.zoom.us/j/98872385313?pwd=MEl5NUdCaTBseC9uWU9FVE9VZzZLZz09

TA: Mr. Yuanhao Liu,
Email: yl1398@scarletmail.rutgers.edu
Office hour: 2-4pm EST on Tuesday, remotely
Office hour Zoom link:
https://rutgers.zoom.us/my/yl1398?pwd=eVY0aE9oeDU0NjBESIVPRIVRLy9sZz09

Prerequisite: Level IV Statistics (e.g. Statistics 960:401 or 960:484)
It should be emphasized that this course will cover a great deal of material at a rapid pace and will involve a lot of mathematics. Students who have had difficulty in previous mathematics, probability and statistics courses may find that this course requires a considerable amount of time and effort and should plan accordingly.

Textbooks: All of Statistics: A Concise Course in Statistical Inference, by Larry A. Wasserman
[Supplemental Text] Pattern Recognition and Machine Learning, by Christopher M. Bishop.

Lectures: Wednesday 6:00-9:00pm EST at 114 Hill Center

Grading: Homework: 30%; Midterm: 30%; Final: 40%.

Homework: Homework will be assigned and collected on Canvas. Late homework will NOT be accepted. DO NOT COPY from other sources. Computer generated output without detailed explanations and remarks will NOT receive any credit.
Course outline (tentative):

0. Introduction
1. Probability, Conditional probability, Independence
2. Random variables and distributions.
3. Expectation and variance, Conditional expectation
   - Bayes rules and Bayesian inference.
5. Probability inequalities: Chebyshev’s inequality, Chernoff inequality and the law of large numbers.
8. Hypothesis testing, multiple testing and false discovery rates. Type I and type II error, power. Familywise error rate and false discovery rate. Benjamini-Hochberg procedure.
Mask Mandate and COVID-19 Protocols

In order to protect the health and well-being of all members of the University community, masks must be worn by all persons on campus when in the presence of others (within six feet) and in buildings in non-private enclosed settings (e.g., common workspaces, workstations, meeting rooms, classrooms, etc.). Masks must be worn during class meetings; any student not wearing a mask will be asked to leave.

Masks should conform to CDC guidelines and should completely cover the nose and mouth:


Each day before you arrive on campus or leave your residence hall, you must complete the brief survey on the My Campus Pass symptom checker self-screening app.