

**The George Washington University
Department of Statistics**

**STAT 4158-10
FALL 2021**

Classes:	Mondays and Wednesdays
Meeting Time:	11:10 AM.- 12:25 PM
Classroom:	BELL 105
Instructor:	Dr.Srinivasan Balaji
Office address:	Suite 767, Rome Hall
Telephone:	(202) 994-3383
Email:	balaji@gwu.edu
Office hours:	Mondays and Wednesdays 2:00 PM to 3:00 PM Wednesdays 2:00 to 3:00 PM (online)

Lectures

We will have in-person lectures this semester. I will also try to record the classes online. Will give more details once the classes begin.

Text: *Mathematical Statistics with Applications* by D. Wackerly, W. Mendenhall, and R.Scheaffer, 7th Edition, Cengage Learning, 2008.

Scope: Having finished Stat-4157 (or equivalent), a course in foundations of probability and basic statistical concepts, you are now ready to move on to applications of these concepts in the data-driven world. The construction of good statistical procedures, testing their degree of goodness and passing to inference about populations from samples are primary topics.

Prerequisites: An introductory course in probability at the level of GWU Stat 4157 (or equivalent) is required. Familiarity with all the basic discrete distributions (Bernoulli, binomial, geometric, Poisson, etc.) and all basic continuous distributions (uniform, exponential, normal, gamma, beta, etc.) is assumed. Also, familiarity with integral and differential calculus is assumed. For example, I expect everyone in the class to know $\int x^6 dx$, $\int e^{-x} dx$, $\int \ln x dx$. Competence in basic algebra is expected, for example extraction of roots of equations of the second and third degree and accurate manipulation of algebraic expressions are assumed to be in your background.

Topics:

WEEK 1:	Review of probability
WEEK 2:	Review of Probability (Continued)
WEEK 3:	Sampling Distributions, Class Quiz 1
WEEK 4:	Sampling Distributions
WEEK 5:	Estimation, Class Quiz 2
WEEK 6:	Estimation Continued
WEEK 7:	Confidence Intervals
WEEK 8:	Method of moments
WEEK 9:	Inference, Class Quiz 3
WEEK 10:	Hypothesis testing
WEEK 11:	Regression, Quiz 4
WEEK 12:	Regression
WEEK 13:	Nonparametrics
WEEK 14:	Review

Learning outcomes

As a result of completing this course, students will be able to:

1. Make inference from real data.
2. Construct good estimators for unknown (and possibly unknowable) parameters in business, engineering, social sciences and physical phenomena.
3. Have a global look on the interplay between probability and statistics.
4. Design realistic statistical procedures.

Testing and Exams

There will be one midterm exam and final exam for the class. There will also be class quizzes (a total of 4) and weekly online quizzes for the class. We will also have graded homework assignments.

Grading Policy:

Midterm (20%)- Midterm Exam on Wednesday, October 6, 2021
Final (25%) – Final Exam during the final exam week
Class Quizzes – 15%

Online Quizzes – 15%
Homework Assignments - 25%

Workload: It is expected that the student will spend about 5-6 hours a week studying and preparing for the class. This time may be evenly split between writing solutions to homework problems and reading in the textbook.

Class Policy: Late work: Will not be accepted. No make-up exams.

Blackboard: Communication will be through blackboard. IF new materials are posted in the blackboard, an email will be sent to students using blackboard.

University Policies

Academic Integrity: I support the GW Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: <https://studentconduct.gwu.edu/code-academic-integrity>

Any case of the slightest hint of cheating will be prosecuted to the fullest extent of the university Academic Integrity Policy. You will receive an automatic F, and the case will be taken to the proper administrative channels.

Support for students outside the classroom:

DISABILITY SUPPORT SERVICES (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to:

<http://gwired.gwu.edu/dss/>

UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300

The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:

- crisis and emergency mental health consultations
- confidential assessment, counseling services (individual and small group), and referrals

See <https://healthcenter.gwu.edu/counseling-and-psychological-services>

Security: In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.