

The George Washington University Department of Statistics

STAT 3119-11 Spring 2022 Analysis of Variance

Meeting Time: Mondays & Wednesdays 11:10 am—12:25 pm

Location: DUQUES 361

Instructor: Dr. Lin Wang

Email: linwang@gwu.edu

Office address: Rome Hall 769

Office hours: Mondays 2-3pm & Wednesdays 6-7pm

Join Live Classes

<https://gwu-edu.zoom.us/j/99913888303?pwd=R0ZZWk56Y1JTMTRXTmFPempyNnRnZz09>

Meeting ID: 999 1388 8303

Passcode: 293341

Join Remote Office Hours

Please join my personal meeting room on Zoom:

<https://gwu-edu.zoom.us/my/linwang>

TA Laboratory

TA: TBD

Meeting Time & Location: Wednesdays 5:10—6:00pm, TOMP 107

Recording:

Classes will be recorded. Recordings will be shared on Blackboard. Please be aware that if we return to in-person classes later, the recording quality depends on the devices in the classroom and may not be perfect.

Textbook

Montgomery, D. C. (2019). Design and Analysis of Experiments, 10th Edition. John Wiley & Sons.

Prerequisites

1. Linear Algebra is required. Familiarity with notations of matrices is assumed.
2. An introductory course in Statistics is required (e.g., STAT1051, STAT2118, or equivalent).
3. R coding is required for computation in the lab session and homework assignments. You do not have to be proficient in R at this moment, but please be prepared to learn and use some fundamental coding techniques in this course.

Topics

This course provides an introduction to the design of experiments and analysis of variance. Topics include:

1. Strategy and principles of experimentation
2. Linear regression with numerical and categorical factors (matrix notations)
3. Simple comparative experiments
4. ANOVA for experiments with a single factor
5. Block designs
6. Factorial designs
7. Two-level fractional factorial designs
8. Response surface methods and designs

Learning Outcomes

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

1. Design an experiment to answer scientific, engineering, or social questions
2. Apply the experimental design strategies to collect data

3. Use ANOVA to analyze experimental data

Grading Policy and Exam Schedule

1 Midterm exam (20%), on Wednesday, March 10th

1 Final (40%), during the final period, to be announced later

4 Quizzes (20%), evenly scheduled through the semester

8-10 Homework assignments (20%. The lowest score will be dropped.)

All exams are open book. Discussion of exam problems during the exam time with fellow students is not allowed. Exams should be completely independent work.

Class Policy

Homework assignments need to be submitted to the portals on Blackboard. Any homework submission sent to the instructor or the TA by email will not be accepted.

Late homework submitted within 2 days (48 hours) of due date will receive 25% penalty for each day (24 hours) late. Any HW late by more than 2 days will not be graded and will receive zero point.

In writing up homework, it is not sufficient to give only the answer to a problem; you must show reasonably detailed justifications/calculations.

Make-up exams: Except for medical cases (with proper documentation), there will be no make-ups.

Workload

Other than the 2.5 hours of lectures, it is expected that the student would 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.

Blackboard

Please check Blackboard frequently, as there may be assignments, announcements, and material passed to the class via this electronic medium during the week. You can find it at

<http://blackboard.gwu.edu/webapps/portal/frameset.jsp>

You need to login, using your GW user ID and password.

University Policy on Observance of Religious Holidays

In accordance with University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. For details and policy, see “Religious Holidays” at provost.gwu.edu/policies-procedures-and-guidelines

Academic Integrity Code

Academic Integrity is an integral part of the educational process, and GW takes these matters very seriously. Violations of academic integrity occur when students fail to cite research sources properly, engage in unauthorized collaboration, falsify data, and in other ways outlined in the Code of Academic Integrity. Students accused of academic integrity violations should contact the Office of Academic Integrity to learn more about their rights and options in the process. Outcomes can range from failure of assignment to expulsion from the University, including a transcript notation. The Office of Academic Integrity maintains a permanent record of the violation.

More information is available from the Office of Academic Integrity at studentconduct.gwu.edu/academic-integrity. The University’s “Guide of Academic Integrity in Online Learning Environments” is available at studentconduct.gwu.edu/guide-academic-integrity-online-learning-environments. Contact information: rights@gwu.edu or 202-994-6757.

Support for Students outside The Classroom

Virtual academic support

A full range of academic support is offered virtually in fall 2020. See coronavirus.gwu.edu/top-faqs for updates.

Tutoring and course review sessions are offered through Academic Commons in an online format. See academiccommons.gwu.edu/tutoring

Writing and research consultations are available online. See academiccommons.gwu.edu/writing-research-help

Coaching, offered through the Office of Student Success, is available in a virtual format. See studentsuccess.gwu.edu/academic-program-support

Academic Commons offers several short videos addressing different virtual learning strategies for the unique circumstances of the fall 2020 semester. See academiccommons.gwu.edu/study-skills. They also offer a variety of live virtual workshops to equip students with the tools they need to succeed in a virtual environment. See tinyurl.com/gw-virtual-learning

Writing Center

GW's Writing Center cultivates confident writers in the University community by facilitating collaborative, critical, and inclusive conversations at all stages of the writing process. Working alongside peer mentors, writers develop strategies to write independently in academic and public settings. Appointments can be booked online. See gwu.mywconline.

Academic Commons provides tutoring and other academic support resources to students in many courses. Students can schedule virtual one-on-one appointments or attend virtual drop-in sessions. Students may schedule an appointment, review the tutoring schedule, access other academic support resources, or obtain assistance at academiccommons.gwu.edu.

Disability Support Services (DSS) 202-994-8250

Any student who may need an accommodation based on the potential impact of a disability should contact Disability Support Services to establish eligibility and to coordinate reasonable accommodations.

disabilitysupport.gwu.edu

Counseling and Psychological Services 202-994-5300

GW's Colonial Health Center offers counseling and psychological services, supporting mental health and personal development by collaborating directly with students to overcome challenges and difficulties that may interfere with academic, emotional, and personal success. healthcenter.gwu.edu/counseling-and-psychological-services

Safety and Security

- In an emergency: call GYPD 202-994-6111 or 911
- For situation-specific actions: review the Emergency Response Handbook at safety.gwu.edu/emergency-response-handbook
- In an active violence situation: Get Out, Hide Out, or Take Out. See go.gwu.edu/shooterpret
- Stay informed: safety.gwu.edu/stay-informed

Title IX statement:

The George Washington University (GW) and its faculty are committed to creating a safe and open learning environment for all students. If you or someone you know has experienced sexual harassment, including sexual assault, dating or domestic violence, and stalking, please know that help and support are available. GW strongly encourages all members of the community to take action, seek support, and report incidents of sexual harassment to the Title IX Office. You may

contact the Title IX Office at 202-994-7434 or at titleix@gwu.edu or learn more by visiting titleix.gwu.edu.