

THE GEORGE WASHINGTON UNIVERSITY
Department of Statistics

STAT 2118: Regression Analysis

SYLLABUS

Course and Contact Information

Course: STAT 2118-10 Regression Analysis (CRN: 61156)

Semester: Fall 2021

Meeting time: Tuesday and Thursday, 12:45 – 2:00pm

Location: Fungler Hall, Room 108

Recitation: Register for one recitation section

Instructor

Name: Joshua Landon

Campus Address: Rome Hall, Room 756

Phone: 202-994-7851

E-mail: jlandon@gwu.edu

Office hours: 11:00am – 12:30pm on Tuesday and Thursday, and by appointment, either in person or remotely at <https://gwu-edu.zoom.us/j/3217834899>

Teaching Assistants

Mengqiu Zhu (32, 34, 35) mzhu32@gwu.edu

Zhuoxin Long (30, 31, 33) zlong66@gwu.edu

Bulletin Course Description

Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables.

Course prerequisites

An introductory statistics course: Stat 1051, Stat 1053, Stat 1111, or equivalent.

Learning Outcomes:

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

1. Understand basic concepts of correlation, regression, model diagnostics and model building.
2. Fit and interpret regression models and apply them in various fields (e.g. Finance, Economics).
3. Analyze and interpret regression data using R.
4. Compare different competing regression models and select the best one among them.

Required textbook

Author	Title	Edition
Kutner et al.	Applied Linear Regression Models	4th

The course will cover the material in chapters 1–10, and parts of chapters 11 and 12.

Software

R: To download it, go to: <https://www.r-project.org/>

It is also recommended to download R-Studio: <https://www.rstudio.com/products/rstudio/download/>

Average minimum amount of independent, out-of-class, learning expected per week:

Over 15 weeks, students will spend 2.5 hours (150 minutes) per week in lecture, and 50 minutes per week in discussion section (50 hours for the semester). Homework and other out-of-class work is estimated at around 250 minutes per week (62.5 hours for the semester) and includes a 2-hour final exam for which approximately 10 hours of review is assumed.

Grading Policy

- Midterm Exams (40%)
- Homeworks (30%)
- Final Exam (30%)

Homeworks: Homeworks will be assigned every Thursday, and will typically be due by COB on Friday of the following week (eight days later).

Exams: All exams will be closed book and notes, but a one-page hand-written “cheat sheet” will be allowed.

Tentative Exam Schedule

Date	Exam	Chapters Covered
Thursday, Sep 30	Midterm I	Chapters 1-3
Thursday, Nov 11	Midterm II	Chapters 5-8
NOTE: In accordance with university policy, the final exam will be given during the final exam period and not the last week of the semester		

Note that the above dates are tentative and the actual date will be confirmed at least one week prior to the exam.

Tentative Class Schedule

Date	Topic(s) covered	Book Sections
Week 1	Review of Confidence Intervals and Hypothesis testing	Appendix A
Week 2	Simple Linear Regression	Chapter 1
Week 3	Inferences in Simple Linear Regression	Chapter 2
Week 4	Regression Diagnostics	Chapter 3
Week 5	Midterm I	
Week 6	Matrix Approach to Regression	Chapter 5
Week 7	Multiple Regression	Chapter 6
Week 8	Second Order Models	Sections 8.1, 8.2
Week 9	Extra Sum of Squares and Nested Models	Chapter 7
Week 10	Qualitative Predictors	Sections 8.3-8.7
Week 11	Midterm II	
Week 12	Model Selection	Chapter 9
Week 13	Diagnostics	Chapter 10
Week 14	Miscellaneous	Chapters 11-12
Week 15	Review	

NOTE: In accordance with university policy, the final exam will be given during the final exam period and not the last week of the semester

University Policies

Use of Electronic Course Materials and Class Recordings

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Please contact Disability Support Services at disabilitysupport.gwu.edu if you have questions or need assistance in accessing electronic course materials.

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.

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

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-faq 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

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 GWPD 202-994-6111 or 911
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- 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

University Policy on 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: students.gwu.edu/accommodations-religious-holidays

Academic Integrity Code

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: studentconduct.gwu.edu/code-academic-integrity

Safety and 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.

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 Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: disabilitysupport.gwu.edu/

Mental Health Services 202-994-5300

The University's Mental Health Services 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. For additional information see: counselingcenter.gwu.edu/