

STAT 8020: Statistical Methods II

Fall 2020

TR 12:30pm – 1:45pm
Online via Zoom [\[Link\]](#)

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Office Hours: TR 11:00am – 12:00pm [\[Link\]](#) and by appointment

Recommended Text:

An Introduction to Statistical Methods and Data Analysis, 6th Edition. **Lyman Ott and Micheal T. Longnecker**, Duxbury, 2010; ISBN-13: 978-1305269477. Other editions and online text are permitted.

Statistical Software: The R project for Statistical Computing (<https://www.r-project.org/>) and RStudio (<https://rstudio.com/products/rstudio/>), an integrated development environment (IDE) for R. You can use other software if you feel comfortable (e.g., SAS, SPSS, Minitab, JASP (<https://jasp-stats.org/> free and open-source)). Students will be tested on understanding outputs of R and JASP.

Course Website: https://whitneyhuang83.github.io/STAT8020/Fall2020/stat8020_2020Fall.html

Prerequisites:

- STAT 8010 (Statistical Methods I) or equivalent
- Basic statistical computing knowledge: R will be used in class

Course Objectives:

Upon successful completion of this course, students should be able to:

1. summarize and interpret research data
2. select and implement several basic experimental designs
3. apply statistical techniques and knowledge appropriately
4. draw appropriate conclusions and inferences from data
5. perform statistical analyses using a software package and interpret software output

Attendance:

Regular attendance via Zoom is expected. Students are free to leave if the instructor is more than 15 minutes late to class. Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless the instructor contacts students. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather-related cancellation.

Specific COVID-19 related information:

Due to pandemic circumstances which may impact student attendance (such as quarantine), students should not receive grade penalties for unexcused absences. For a student who reports testing positive or is being asked to quarantine/isolate because of exposure to the virus, it will be up to the student to inform the instructor that they will be moving to online-only instruction for at least the next two weeks. Students are directed to use the Notification of Absence link in Canvas to initiate this notification, which can be found under the “help” button on the left navigation. Additional communication via email is encouraged; students should follow up with their instructor to develop a continued plan of study for each course. Students cannot be penalized in their grade for needing to move to online instruction.

Make-up Work Due to Missed Attendance:

1. Students should speak with their course instructors regarding any scheduled absence as soon as possible and develop a plan for any make-up work.
2. In the event of an emergency, the student should make direct contact with the course instructor, preferably before a class or an exam takes place. It is the student’s responsibility to secure documentation of emergencies, if required.
3. Course instructors must implement fair grading procedures and provide an opportunity to make up missed assignments and examinations that does not unfairly penalize the student. Issuing specific dates by which make up work must be submitted without confirmation from the student could constitute unfair penalization, as students with illness (including COVID-19-related illness) may not always respond in a timely manner. Such make-up work shall be at the same level of difficulty with the missed assignment or examination. Course instructors shall hold all students to the same standard for making up missed assignments or examinations.
4. While course instructors should seek to make reasonable accommodation for a student involved in University-sponsored activities, students should understand that not every course can accommodate absences and that absences do not lessen the need to meet all course objectives.

Notification of Absence:

1. The Notification of Absence module in Canvas allows students to quickly notify instructors (via an email) of an absence from class and provides for the following categories: court

attendance, death of family member, illness (or COVID-19 related isolation), illness of family member, injury, military duty, religious observance, scheduled surgery, university function, unscheduled hospitalization, other anticipated absence, or other unanticipated absence. The notification form requires a brief explanation, dates and times. Based on the dates and times indicated, instructors are automatically selected, but students may decide which instructors will receive the notification. This does not serve as an “excuse” from class, and students are encouraged to discuss the absence with their instructors. If a student is unable to report the absence electronically, he/she may call the Office of Advocacy and Success at 656- 0935 for assistance and guidance.

2. The Office of Advocacy and Success also assists students in identifying various appropriate methods of documenting absences and assists families in using the electronic Notification of Absence system when students are unable to do so themselves.

Class Participation:

Due to the possibility that students might shift to online learning while in isolation/quarantine, class participation grades need to be structured in ways that do not penalize students that are suddenly unable to attend class in person. Instructors are encouraged to shift class participation assessment and point/grade allocation to other engaged activities that all students can accomplish, even those accessing the course remotely.

Policies on Incompletes and Medical Withdrawals:

1. Issuing an “Incomplete” grade (I) to a student is an option if a student is unable to complete makeup work in a timely manner due to COVID-19 related illness or other issues. An Incomplete indicates that a relatively small part of the semester’s work remains undone. It is not intended for students who are failing a course otherwise. In the event that an Incomplete is appropriate, students will contact instructors in a timely manner so that instructors can provide a reasonable opportunity to complete remaining work. Instructors and students will work together to resolve the Incomplete grade as soon as possible, not to exceed thirty days from the first day of classes in the next scheduled session (excluding summer sessions and regardless of the student’s enrollment status). More information on an Incomplete grade can be found in the Undergraduate Catalog.
2. Sometimes due to illness (including COVID-19 related illness) or other life circumstances, students may not be able to complete academic work for the term and will need to withdraw from all classes. The Division of Undergraduate Studies will process medical withdrawals. Students should contact the Division by sending an email from their Clemson email address to Lisa Traynham at lltrayn@clemson.edu.

If you report testing positive for COVID or have been asked to quarantine/isolate because of exposure to the virus, it will be up to you to inform your instructor that you will be moving to online only instruction for at least the next two weeks. Students are directed to use the Notification of Absence module in Canvas to initiate this notification. Additional communication via email is encouraged; you should follow up with your instructor to develop a continued plan of study.

Exam Information:

There will be three **online** exams and **you are allowed to use statistical software**. The dates for the three exams are:

- **Online Exam I:** Sept. 24, Thursday
- **Online Exam I:** Oct. 20, Tuesday
- **Online Exam II:** Nov. 12, Thursday

The **Online Final Exam** will be given on Monday, Dec. 7, 3:00 pm - 5:30 pm.

Evaluation:

- Grade Distribution:

Exam 1	25%
Exam 2	25%
Exam 3	25%
Final Exam	25%

- Letter Grade:

≥ 90.00	A
88.00 ~ 89.99	A-
85.00 ~ 87.99	B+
80.00 ~ 84.99	B
78.00 ~ 79.99	B-
75.00 ~ 77.99	C+
70.00 ~ 74.99	C
68.00 ~ 69.99	C-
≤ 67.99	F

Key Dates:

- **Aug. 25, Tue:** Last day to register or add a class or declare audit
- **Sept. 1, Tue:** Last day to drop a class or withdraw from the University without a W grade
- **Oct. 23, Fri:** Last day to drop a class or withdraw from the University without final grades

COVID-19 Related Expectations for Face Coverings:

Specific COVID-19 related information for in-person classes: While on campus, face coverings are required in all buildings and classrooms. Face coverings are also required in outdoor spaces where physical distance cannot be guaranteed. Please be familiar with the additional information on the Healthy Clemson website, such as the use of wipes for inperson classes. If an instructor does not have a face covering or refuses to wear an approved face covering without valid accommodation, students should notify the department chair. If a student does not have a face covering or refuses to wear an approved face covering without valid accommodation, the instructor will ask the student to leave the academic space and may report the student's actions to the Office of Community & Ethical Standards as a violation of the Student Code of Conduct. If the student's actions disrupt the class to the extent that an immediate response is needed, the instructor may call the Clemson University Police Department at 656-2222.

Academic Integrity Statement:

“As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a ‘high seminary of learning.’ Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity.”

Please refer to the current Graduate School Policy Handbook for the graduate academic integrity policy.

Disability Access Statement:

It is university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students with disabilities requesting accommodations should make an appointment with Disability Services (656-6848), to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Title IX Statement:

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. The policy is located at <http://www.clemson.edu/campus-life/campus-services/access/non-discrimination-policy.html>. Alesia Smith is Clemson University Title IX Coordinator. She is also the Executive Director of Equity Compliance, Her office is located at 223 Holtzendorff Hall, (864) 656-3181 (voice).

Inclement Weather:

Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless contacted by the instructor. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather related cancellation.

Academic Continuity Plan for this Class:

Clemson has developed an academic continuity plan for academic operations. Should University administration officially determine that the physical classroom facility is not available, class will

be conducted in a virtual (online) format. The University issues official disruption notifications through email/ www/ test notification / social media. When notified, use one of the following links to navigate for Clemson Canvas, where you will find important information about how we will conduct class:

- Primary access link: www.clemson.edu/canvas
- Secondary access link, if needed: <https://clemson.instructure.com/>
- You can also use the Canvas Student App.

Our activities for teaching and learning will occur through our Canvas course. This includes: assignments, quizzes

Tentative Topics and Dates:

Part I: Regression Analysis (August 20 – September 24)

- Review of Simple Linear Regression
- Multiple Linear Regression: Statistical Inference; Model Selection and Diagnostics
- Regression Models with Quantitative and Qualitative Predictors
- Nonlinear and Non-parametric Regression

Part II: Categorical Data Analysis (September 29 – October 20)

- Review of Inference for Proportions and Contingency Tables
- Relative Risk and Odds Ratio
- Logistic Regression and Poisson Regression

Part III: Experimental Design (October 22 – November 12)

- Introduction to Experimental Design: Principles and Techniques
- Completely randomized Designs, Block Designs, Latin Square Designs, Nested and Split-Plot Designs
- Computer experiments

Part IV: Multivariate, Spatial and Time Series Analysis (November 17 – December 3)

- Discriminate Analysis, Principle Components Analysis, and Cluster Analysis
- Basic of time series and spatial data analysis