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Modality: Flipped with synchronous meetings on T/TH 2:50 - 4:05 in Votey 205

Required Materials:

- **Text:** “Applied Regression Analysis and Other Multivariable Methods” by Kleinbaum, Kupper, Nizam and Rosenberg (5th Edition).
- A scientific calculator (you cannot use your phone)

Prerequisites: STAT 2830 (or equivalent), STAT 3010 (or equivalent) recommended.

Software:

We will use the R statistical software. R can be downloaded onto your own computer (see the course webpage under ‘resources’) and is available labs in the Votey building, and some computers in the library.

Additionally, the software platforms MS Teams and Brightspace will be used as described in the “Other Required Software Platforms” section below. Also, either the CamScanner or Genius-Scan app will be needed on your phone.

Please read this technology check list (<https://www.uvm.edu/it/kb/student-technology-resources/>) to make sure you are ready for classes and *contact the Helpline (802-656-2604) for support with technical issues.*

Course description:

The course will consist of a mixture of recorded lecture (*viewed prior to class*), in-class group work, discussion, and projects to highlight particular topics. It would be impossible, however, for these to encompass all of the material for the course. There will be some material in the text for which you will be responsible that we will not cover in detail during class. *I expect that you will be reading in the text to supplement our in-class work.*

The course will cover material from the chapters listed below with additional topics as time allows.

Topics	Chapters
Straight-Line Regression Analysis	5
The Correlation Coefficient and Regression Analysis	6
The Analysis of Variance Table	7
Multiple Regression Analysis: General Considerations	8
Testing Hypothesis in Multiple Regression	9
Correlations: Multiple, Partial, and Multiple Partial	10
Confounding and Interaction	11
Regression Diagnostics	14
One-Way Analysis of Variance	17
Two-Way ANOVA w/ Equal Cell Numbers (time permitting)	19

Assignments & Policies:

Watching and taking notes on the pre-recorded class videos will be an ongoing homework assignment throughout the course. You will submit handwritten pre-class notes (as a scanned PDF) before each class meeting about the video assigned for that day’s class. Why handwritten? Research shows clearly that handwriting leads to better learning and retention than typing (Marano et al. 2025; Van der Weel, 2024).

Homework assignments will be listed on the class webpage and will be due (submitted via Brightspace) on Fridays by the end of the day. **Late assignments will not be accepted.**

Be sure to preface the subject of any email related to the course with “stat 5210:”, otherwise I may not see your email (e.g., stat 5210: *your subject here*).

Cell phones must be off and away during class. They distract and disrupt those sitting around you.

You are encouraged to work together in groups, but solutions to classwork and homework assignments must be written on your own. This will help to clarify your understanding of the material by ensuring that you have thought through the ideas for yourself. *You must note the name(s) of any group partners on the top of any assignment that is a group effort.* You will submit your classwork, as a scanned PDF, at the end of each class using the “tinyurl” for the course. You can use your phone for this.

You must show your work for each HW problem, since little to no credit will be given for simply writing the final answer. Your grade will be reduced if the work is messy or difficult to read. Notes/Classwork/HW that is not properly submitted (with correct filenames & format and on time to the correct location) may not be graded.

Van der Weel, F & Van der Meer, A (2024) Handwriting but not typewriting leads to widespread brain connectivity: a high-density EEG study with implications for the classroom. *Frontiers in Psychology* 14:1219945.

Marano G, et al. The Neuroscience Behind Writing: Handwriting vs. Typing - Who Wins the Battle? *Life Journal*. 2025 Feb 22;15(3):345.

Grading:

Your final grade will be determined by your exams, quizzes, homework, and participation in class discussions according to the distribution below. There will be at least one quiz before each exam and there is a possibly of a brief quiz on any Thursday. Attendance will be taken at each class and will count toward your participation grade.

Quizzes	12%	
PCN* & Classwork	20%	*PCN=Pre-Class Notes
HW & Projects	22%	
2 Exams	30%	(planned for 10/08 and 11/17)
Final	16%	(17-DEC-2026 4:30 - 7:15, VOTEY 205)

Letter grades will be assigned using standard thresholds - a numerical score of 88% will translate into at least an A-, 78% will translate into at least a B-, 68% will translate into at least a C-, ...

Students enrolled in STAT 5210 will have to successfully complete assignments that focus on the underlying theory, results from linear algebra, and derivations of some statistical relationships.

Learning Outcomes:

Upon completing the course, students will be able to: write code in R to import data, transform data, and fit a variety of linear models including simple linear regression, multiple linear regression, and analysis of variance; understand the assumptions, strengths, and weaknesses of these methods; assess the assumptions when applying these methods; interpret and summarize the results; concisely communicate results in writing; understand and derive some theoretical results underlying the methods, including representations using linear algebra; and understand the importance of following directions in completing a project.

Recording of Class Sessions

If there is a need to have any remote class sessions, they will be recorded for you to refer back to. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class are agreeing to have their voices recorded.

OTHER REQUIRED SOFTWARE PLATFORMS

Brightspace

I will use Brightspace to post HW solutions and collect HW assignments. I do not plan to post messages or announcements via Brightspace.

Calculator (not an app on your phone)

You will need to bring a scientific calculator to class that has memory storage. We will be using it for classwork in almost every class. You cannot use your phone for computation during classwork or for exams. The only time you will be using your phone during class is to scan and submit daily classwork.

If I see you using your phone during class (other than for submitting classwork), I will ask you to put it away the first time. I will ask you to leave the second time. It is a distraction for you and those sitting near you.

ACADEMIC INTEGRITY

Offences against the **Code of Academic Integrity** are deemed serious and insult the integrity of the entire academic community. This policy addresses plagiarism, fabrication, collusion, and cheating. <https://www.uvm.edu/sites/default/files/UVM-Policies/policies/acadintegrity.pdf> (PDF link).

Any suspected violations of the code are taken very seriously and will be forwarded to the [Center for Student Conduct](#) for further intervention.

Code of Student Conduct: <https://www.uvm.edu/policies/student/studentcode.pdf> (PDF link)

1. Faculty and students will attend all regularly scheduled classes, except for those occasions warranting an excused absence under the University Attendance Policy (e.g., religious, athletic, and medical).
2. Students and faculty will arrive prepared for class and on time, and will remain until the class is dismissed.
3. Faculty and students will treat all members of the learning community with respect.
4. Students and faculty will maintain an appropriate academic climate by refraining from all actions that disrupt the learning environment.

COVID-19 POLICY STATEMENTS

General statement regarding potential changes during the semester:

<http://catalogue.uvm.edu/>

The University of Vermont reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or public health directives.

Green and Gold Promise:

The [Green and Gold Promise](#) clearly articulates the expectations that UVM has for students, faculty, and staff to remain compliant with all COVID-19 recommendations from the federal CDC, the State of Vermont, and the City of Burlington.

The [Code of Student Conduct](#) outlines policies related to violations of the Green and Gold Promise. Sanctions for violations include fines, educational sanctions, parent notification, probation, and suspension.

Intellectual Property Statement/Prohibition on Sharing Academic Materials:

Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or other copyrighted class materials, etc.); and students are prohibited from sharing assessments (for example homework or a take-home examination). Violations will be handled under UVM's Intellectual Property policy and Code of Academic Integrity.

STUDENT LEARNING ACCOMMODATIONS

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Student Accessibility Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student's accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan. Contact SAS: A170 Living/Learning Center: [802-656-7753](tel:802-656-7753) (phone link).

Contact Student Accessibility Services (SAS)

A170 Living/Learning Center

[802-656-7753](tel:802-656-7753) (phone link)

access@uvm.edu (email link)

https://www.uvm.edu/academicsuccess/student_accessibility_services

UVM's policy on disability certification and student support:

<https://www.uvm.edu/policies/student/disability.pdf> (PDF link)

HEALTH AND WELLBEING

The Center for Health & Wellbeing (CHWB) offers a wide range of services to support your mind, body, and soul while you're at UVM. The Student Health Services staff of board certified physicians, physician assistants, nurse practitioners, nurses, and dietitians work with patients and collaborate with other CHWB providers to ensure personalized and timely care to UVM students. Counseling & Psychiatry Services (CAPS) offers short-term individual counseling, urgent needs counseling, group counseling, outreach and education, psychiatry, referrals, and consultation services.

Please visit their website at: <http://www.uvm.edu/~chwb/> to find out more.

At Living Well they believe that mental and physical health go hand in hand. They have a variety of programs that offer you the space to create a wellness practice that will support your goals and positive intentions. I highly recommend you to visit their LivingWell website at <http://www.uvm.edu/~chwb/livingwell/> and checkout the meditation and yoga videos.

Extensive research has shown the benefits of meditation towards the learning process.

http://www.huffingtonpost.com/2013/04/08/mindfulness-meditation-benefits-health_n_3016045.html

COUNSELING & PSYCHIATRY SERVICES (CAPS)

Phone: (802) 656-3340

If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at <https://www.uvm.edu/deanofstudents>.

Counseling and Psychiatry Services: <https://www.uvm.edu/health/CAPS>

RELIGIOUS HOLIDAY POLICY STATEMENT

Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the first week of classes. You will be permitted to make up work within a mutually agreed-upon time.

GRADING

Your grades will be posted on Bb. Please notify me if you find any mistakes.

For information on grading and GPA calculation, go to the Registrar's page on grading.

<https://www.uvm.edu/registrar/grades> .

GRADE APPEALS

If you would like to contest a grade, please follow the procedures outlined in this policy: <https://www.uvm.edu/policies/student/gradeappeals.pdf> (PDF link)

FERPA RIGHTS DISCLOSURE

The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974. <https://www.uvm.edu/policies/student/ferpa.pdf> (PDF link)

FINAL EXAM POLICY

The University final exam policy outlines expectations during final exams and explains timing and process of examination period. <https://www.uvm.edu/registrar/final-exams>

STATEMENT ON ALCOHOL AND CANNABIS IN THE ACADEMIC ENVIRONMENT

As a faculty member, I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. It is important to note that alcohol and cannabis have no place in an academic environment. They can seriously impair your ability to learn and retain information not only in the moment you may be using, but up to 48 hours or more afterwards. In addition, alcohol and cannabis can:

- Cause issues with attention, memory and concentration
- Negatively impact the quality of how information is processed and ultimately stored
- Affect sleep patterns, which interferes with long-term memory formation

It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.

TIPS FOR SUCCESS

- Checklist for success: <https://learn.uvm.edu/about/support-for-students/checklist-online-credit-courses/>
- Academic support for online courses: <https://www.uvm.edu/academicsuccess/online-learning-student-resources-remote-instruction>
- 30-minute webinar on online learning success (Mar 2020):
https://www.youtube.com/watch?v=Xp_MYsqQyvE

Emergency Operations and Academic Continuity

In the event of an emergency situation, such as hazardous weather, natural disasters, widespread illness, or other unexpected event that disrupts normal class and/or lab activities, UVM may move to emergency operations. Students should visit the University of Vermont homepage (www.uvm.edu) for official university announcements. Depending on the situation, the university may move to online operations, where students may be expected to switch to online learning for the duration of the emergency, or may close campus entirely. If the university moves to official emergency operations, our syllabus, course plans, and assignments may be modified to allow us to complete course material. Modifications may include remote or online delivery of course materials and modifications to the original course schedule. Any course-specific instructions during a campus closure or switch to online learning will be communicated by me via email. If the University campus closes unexpectedly, this course will follow the University opening and closing schedule as well as the stated guidelines/expectations for instruction, including switching to online learning. During the emergency, please contact me for course-related information via email. Understand that my ability to respond will be dictated by emergency conditions.