STAT 314 (Section 001)
Applications of Statistics

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Office Hours: By appointment...just call or email. If you visit and I am available, I'll help you out as well.


Response System: TopHat.com — Join Code: 397565

Course Description: A study of the concepts and application of statistical methods including: estimation and hypothesis testing for two sample problems; one factor analysis of variance and multiple comparisons; randomized block designs and analysis; inferences on categorical data, including chi-square test for independence for contingency tables; simple linear regression and correlation; multiple linear regression. Special topics include distribution free (nonparametric) methods in various statistical problems, two factor analysis of variance, and the use of a statistical software package for data analysis. Prerequisite: STAT 210 or STAT 212. This section meets on Mondays and Wednesdays from 8:00 AM – 9:50 AM for 29 days during Fall 2019.

Topics | Textbook Chapters | Time
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Confidence Intervals and Hypothesis Testing using a single sample and for comparing two populations | Chapters 9 – 11, 16.1, 16.2 | 10 days
Categorical Data Analysis, One-Way Analysis of Variance, Two-Way Analysis of Variance, Multiple Comparisons, Randomized Block Designs | Chapters 12, 15, 16.3 | 10 days
Simple Linear Regression, Multiple Linear Regression, Variable Selection, Regression Inferences | Chapters 5, 13, 14 | 9 days

Tests: There will be three tests this term, and they are subject to the rules of the VCU Honor System. If you must miss a test, you should contact the instructor in advance (email or voicemail); DO NOT EXPECT MAKE-UP TESTS!!
The tentative test dates are:
TEST #1 (Chapters 9 – 11, 16.1, 16.2) September 25
TEST #2 (Chapters 12, 15, 16.3) October 30
TEST #3 (Chapters 5, 13, 14) December 9

Classwork: Classwork will be worked on in class and will be due periodically throughout the term as indicated on the schedule. You may work together on the classwork, but what you turn in should represent your own understanding of the problems. Round all answers to at least four decimal places (by-hand & in SPSS). These assignments must be completed so that they may be submitted electronically in Blackboard. You should submit your assignment as a single file in .doc, .docx, .pdf, or .rtf formats; points will be deducted if this procedure is not followed. If you have difficulty with any of the classwork, we will be more than happy to work with you. NO LATE CLASSWORK will be accepted except in extreme circumstances and only with advance notice. Your classwork will be partially graded (5 points) based on completeness of the assignment, and two selected classwork problems each will be graded on a three-point scale: three points (if done correctly), two points (if there are minor errors), one point (if reasonably attempted), and no points (if not attempted). Be sure to show your work, including any formulas that you use. Listing calculator steps does NOT count as showing work. Solutions to all assigned classwork problems will be made available.

Grading:

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<th>Classwork</th>
<th>Points</th>
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| CLASSWORK (Total combined score)   | 100 pts.
| PROJECTS (Total combined score)    | 100 pts.
| TOPHAT (Total combined score)      | 100 pts.
| TEST #1                            | 100 pts.
| TEST #2                            | 100 pts.
| TEST #3                            | 100 pts.
| TOTAL                             | 600 pts.

A (540 – 600 pts.); B (480 – 539 pts.); C (420 – 479 pts.); D (360 – 419 pts.); F(0 – 359 pts.)

THERE WILL BE NO EXTRA CREDIT ASSIGNMENTS
**Class Structure:** This will be a “flipped” class. In a traditional class structure, students attend class to listen to the instructor deliver a lecture. They take notes in class, and then they are given classwork to do on their own to reinforce the material covered in the lecture. In a “flipped” class, students listen to the lecture material on their own, and then class time is spent working with the instructor and fellow students on problems.

In this course, to prepare for class you will be expected to watch video recordings of the lectures, which are posted on Blackboard. You should expect to spend approximately 2 hours before each class watching the lecture and example videos, and you should take notes, just as you would during a traditional lecture. In class, we will answer questions based on the concepts introduced in the lectures, and then work together to complete the “classwork” problems. Any problems that you do not finish in class will need to be finished on your own before the assignment’s due date.

This “flipped” class structure will require you to actively take responsibility for your part of the learning process. It will be up to you to make sure that you watch the lecture material in advance and not just show up for class and try to “wing” it. The benefit of this class style will be that, instead of showing up for class and passively listening and then trying to solve problems at home on your own with no help, you will be able to do the listening at home and then have the chance to receive help from both your classmates and the instructors as you work through the problems.

To help you assess your understanding of the video lectures and examples, we will have clicker quizzes at the beginning of most classes, so you will want to be sure that you have kept up with the required reading and video watching. At the end of most classes, we will have another clicker quiz to help you assess your understanding of the topics and techniques after our class discussions and problem solving.

**Credit Hour:** A credit hour is defined as a reasonable approximation of one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately 15 weeks, or the equivalent amount of work over a different amount of time. Credit is based on at least an equivalent amount of work for other academic activities including laboratory work, internships, practica, studio work and other academic work leading to the award of credit hours and is established by individual programs. This definition represents the minimum standard. Student time commitment per credit hour may be higher in individual programs. (For more info, go to http://bulletin.vcu.edu/academic-regs/university/course-info/.)

**Workload Expectations:** This is a four-credit course. Therefore, you are expected to spend at least eight (8) hours each week outside of class in addition to the approximately four (4) hours that you will spend each week in class. While some weeks will not require the full twelve (12) hours of effort, others might require more; however, it is our expectation that the average time spent on this course will be approximately twelve hours per week. Be sure that you budget your time (and schedule your work/job hours appropriately) to allow for this workload each week.

**Response System:** During class you will be asked questions that require you to answer by using the TopHat app or texting on your phone. Your TopHat grade for the course will be determined by the number of questions you answer correctly throughout the entire semester. You must answer questions within the system—no written answers are accepted. Submitting answers for another student or communicating with students inside or outside of the classroom during TopHat questioning is a violation of the Honor Code.

**Calculator/Software:** A calculator that you know how to use is required for this class. I recommend the TI-83 series, TI-84 series, or TI-Nspire series graphing calculators because they have built-in statistical capabilities. Sharing of calculators will not be permitted. Most assignments will incorporate SPSS software; this software is available at VCU for FREE for Windows, Mac, etc. (go to http://go.vcu.edu/spss/ for info and to download).

**Attendance:** You are expected to attend class regularly and to arrive on time. The last day of this class is Monday, December 9; however, we will meet during our assigned final exam time (see course schedule).

**Important:** If you must miss a class for some reason, be sure to contact a fellow student to find out what was discussed in class; furthermore, if you must miss a class in which an assignment is due or a test is to be given, it is in your best interests to notify me ahead of time (even if you must call/email just before class begins)! Remember...do not expect me to accept late assignments or to give make-up tests.

**Withdrawal Date:** The last day to withdraw from the course is Friday, November 1.
Policies:

1. All assignments must be submitted electronically as a single file in Blackboard unless directed otherwise. Also, for SPSS exercises, only the relevant output should be included, and it should be well-labeled and identified. All exercises should be submitted in numerical order, so leave sufficient space to insert the SPSS exercises in numerical order among the by-hand exercises (don't just attach the SPSS exercises to the end of the handwritten exercises).

2. Classwork exercises will be of two types: “By-Hand” exercises and “SPSS” exercises. Most exercises are to be completed by-hand, showing your work step-by-step (listing calculator steps does NOT count as showing work); you may write out these exercises and scan them for submitting, or you may type these exercises and save them in an appropriate format for submitting. Regardless of your by-hand method (writing or typing), you are expected to show all of your calculation steps. Several exercises are to be completed using SPSS software; you are expected to use the software to perform the appropriate analyses and then include the relevant output within your write-up (or type-up) of the exercise. See the “Examples” and “SPSS Help Sheets” folders in Blackboard to see what I expect your submitted work to look like. These examples are written-up just like your classwork exercises should be.

3. Classroom computer usage will be limited to class-related exercises and demonstrations only. Checking email and surfing the web are not permitted, and doing so may result in your removal from the classroom.

4. Electronic devices must be turned off in class unless permission is granted. Violators may have the offending devices confiscated or may be dismissed from the classroom in accordance with Virginia Commonwealth University’s policies governing student conduct in the classroom, and these policies will be enforced in their entirety at all times in this class. Further details on student conduct policies may be found in the online VCU Bulletin at http://bulletin.vcu.edu/academic-regs/university/student-conduct/ and at the Office of Student Conduct and Academic Integrity website at https://conduct.students.vcu.edu/student-code-of-conduct/.

5. The VCU Honor System applies at all times in this class. For specific details on the VCU Honor System, please visit https://conduct.students.vcu.edu/vcu-honor-system/.

6. University Rules and Procedures prohibit anyone "to have in his possession any firearm, other weapon, or explosive, regardless of whether a license to possess the same has been issued, without the written authorization of the President of the University."

7. Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require Virginia Commonwealth University to provide an ‘academic adjustment’ and/or a ‘reasonable accommodation’ to any individual who advises us of a physical or mental disability. If you have a physical or mental limitation that requires an academic adjustment or an accommodation, please arrange a meeting with me at your earliest convenience. Additionally, if any of your course work requires you to work in a lab environment, you should advise the instructor or department chairperson of any concerns you may have regarding safety issues related to your limitation(s).

8. All students are expected to comply with the Student Computer Initiative: http://sci.vcu.edu/.

9. Students should visit http://go.vcu.edu/syllabus/ and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.

Helpful Hints:

1. If you have an emergency, it is your responsibility to notify the instructor as soon as possible.

2. Get the name and phone number of two or three of the students in this class to call/text if you miss class, to ask questions when you need help, or to form study groups.

3. If you have questions, please feel free to ask either during class or during office hours. Class participation is strongly encouraged.

4. The concepts of this course build upon one another as the course progresses. To succeed, you must master each concept when it is presented. For this reason, you must put forth an adequate amount of time and effort on the lectures, exercises, and reading material on a regular basis.

5. If the fire alarm is sounded, we will evacuate the building and meet as a class in a designated area outside. If the emergency siren is sounded, we will remain in the classroom with the doors locked and will follow the instructions at http://alert.vcu.edu/. You should sign-up for the VCU Alert text messaging service at http://alert.vcu.edu/signup/ (VCU Alerts should be sent automatically to your VCU email).