**Data Analysis (CJUS 6103)**

**Fall Semester, 2023**

**Colvard 5091, Tuesdays 5:30pm-8:15pm**

**INSTRUCTOR INFORMATION:**

**Name:** Samuel E DeWitt (you may call me Professor DeWitt or Dr. DeWitt)

**Email:** [samuel.dewitt@uncc.edu](mailto:samuel.dewitt@uncc.edu)

**Office Hours:** By appointment

**REQUIRED TEXTS:**

**Cunningham, Scott. (2021). Causal inference: The mixtape.** <https://mixtape.scunning.com/>

**Dalpiaz, David (2023). Applied Statistics with R.** <https://book.stat420.org/applied_statistics.pdf>

**Greenwood, Mark C. (2022). Intermediate Statistics with R.** <https://greenwood-stat.github.io/GreenwoodBookHTML/>

**Huntington-Klein, Nick. (2023). The effect: An introduction to research design and causality.** <https://theeffectbook.net/index.html>

\*\*\*All of these texts are freely available at the provided links

**COURSE OBJECTIVE:**

This course is required to fulfill the support sequence for the M.A. program in criminal justice. Its purpose is to provide a foundation for the interpretation and production of statistics, with special application to the fields of criminology and criminal justice. We will cover such topics as descriptive statistics, hypothesis testing, and regression. My goal is for you to become an informed consumer of statistical information. As such, although this course will involve theory and a non-trivial amount of computation, the emphasis will be more on application and interpretation. Comfort with algebra is assumed. Previous experience with statistics is neither required nor assumed.

**LEARNING GOALS:**

Students will (hopefully):

1) understand the logic behind probability theory;

2) learn the structure and purpose of null hypothesis testing;

3) learn and be able to apply appropriate statistical tests for various combinations of quantitative or qualitative variables;

4) learn the basics of statistical programming using R;

5) understand regression analysis and its assumptions.

**COURSE REQUIREMENTS:**

There will be several components to your grade including calculation/programming assignments and exams. The breakdown is as follows:

|  |  |
| --- | --- |
| **Grade Components** | **Worth** |
| Homework Assignments | 25% |
| Exam I | 20% |
| Exam II | 25% |
| Exam III | 30% |

|  |
| --- |
| A: 89.45-100% |
| B: 79.45-89.44% |
| C: 69.45-79.44% |
| D: 59.45-69.44% |
| F: <=59.44% |

Completion of the Criminal Justice graduate program requires that you obtain a grade of “B” or better in this course. Extra credit will not be given, and the professor will not allocate a grade of “B” that is unearned simply because a student needs to graduate.

EXAMS: Exams will be take-home, due by 11:59pm on the day indicated on Canvas. I will post all exams approximately two weeks before they are due. Exams will cover new material from lectures and assigned readings. Exams will consist of several multi-part questions which will require manual calculations using statistical programming (using R) and step-by-step calculations using the equation language in RMarkdown (LaTex).

Although exams will not explicitly be cumulative, statistical knowledge is itself cumulative in nature. Therefore, failure to fully understand earlier concepts will make it decidedly more difficult to understand concepts covered later in the semester (read between the lines – review and correct your old exams!). Students may be afforded the opportunity to revise their exams to get back half the credit they lost initially. Exam revisions will be allowed at the discretion of the instructor. Instructions for exam revisions will be posted to Canvas later in the semester.

HOMEWORK ASSIGNMENTS: There will be approximately 5-7 homework assignments over the course of the semester. Homework assignments will consist of 4-7 multipart questions that involve material covered the week they are assigned and builds upon prior material. All assignments will require statistical programming in R and step-by-step calculations using the equation language in RMarkdown (LaTex). Homework assignments will generally be due by 11:59pm on Monday nights. Homework assignments will be submitted through Canvas. I will drop the lowest homework grade at the end of the semester (possibly the two lowest grades, but this depends on how many assignments we end up having). No revisions to homework assignments will be permitted.

LATE ASSIGNMENT POLICY: Students will be allotted four “Life Happens” passes for the semester. A “Life Happens” pass may be used to extend the due date for a homework assignment, exam, or exam revision by 72 hours (including weekend days – e.g., an assignment due by Friday at 11:59pm would then be due the following Monday by 11:59pm). You need not provide a reason for the request and I will not ask for one. If you would like to use one of these “Life Happens” passes you only need to email me BEFORE the assignment is due and let me know that you will be using one of your passes. You may NOT use a “Life Happens” pass on the final exam – as I generally have it due with just enough time to grade it and input final grades.

You may only use one pass per assignment – you cannot extend the due date any further past the initial 72-hour extension (unless, of course, there is a medical or other university-excused reason for the need for a longer extension – please contact me in those scenarios and we will work out a reasonable due date for you).

**APPOINTMENTS AND EMAIL ETIQUETTE:**

If you have a question or a problem, see me before lecture or contact me through email or Discord. When emailing or messenging me to schedule an appointment be sure to send me three times you are available to meet, and we will find a time that works for both of us. Office meetings will be held via Zoom.

When you send me an email, put the course name in the subject, be courteous, and sign your name. If you send me an email (for any reason), after I reply, send me a reply to confirm you received it, even if it just says “okay” or “thanks.”

I will answer any emails I receive around the end of every other workday, typically from 4pm to 5pm (or so) during the week (Monday, Wednesday, Friday). I will make my best effort to answer all emails within a 24 to 48-hour period, so long as they are received before 5pm on Fridays (in which case, a response will be sent the following Monday). All inquiries about grades sent through email will not be answered via email; you must schedule an appointment to discuss grades. Please note that inquiries about grades may result in an increase to your grade (if your argument is reasonable and I feel you deserve more points than you were awarded) or a decrease to your grade (if your argument is unreasonable and I feel you deserve fewer points than you were awarded).

**ACADEMIC INTEGRITY:**

Students are required to have knowledge of and observe all regulations pertaining to campus life and student deportment. The University has enacted two codes of student responsibility: The UNC Charlotte Code of Student Academic Integrity and The UNC Charlotte Code of Student Responsibility. This Code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials (such as Library books on reserve), and complicity in academic dishonesty (helping others to violate the Code). Any further specific requirements or permission regarding academic integrity in this course will be stated by the instructor, and are also binding on the students in this course. For more information, please visit <http://integrity.uncc.edu/>.

Students who violate the Code can be punished to the extent of being permanently expelled from UNC Charlotte and having this fact recorded on their official transcripts. The normal penalty is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases, the course grade is reduced to "F." If you do not have a copy of the Code, you can obtain one from the Dean of Students Office or access it online at http://www.legal.uncc.edu/policies/ps-105.html. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty they become aware of to the course instructor who is responsible for dealing with them. As students willingly accept the benefits of membership in the UNC Charlotte academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNC Charlotte community cooperation that make those benefits possible.

\*\*\* Bottom line: Do not cheat. I have failed students for integrity violations before, and I am

sure I will do so again.

**SEXUAL HARASSMENT**

All students are required to abide by the UNC Charlotte Sexual Harassment Policy (http://www.legal.uncc.edu/policies/ps-61.html) and the policy on Responsible Use of University Computing and Electronic Communication Resources (http://www.legal.uncc.edu/policies/ps-66.html). Sexual harassment, as defined in the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards. UNC Charlotte strives to create an academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking.  If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone.  UNC Charlotte has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware that many UNC Charlotte employees, including all faculty members, are considered [Responsible Employees](http://titleix.uncc.edu/about-title-ix/definitions) who are required to relay any information or reports of sexual misconduct they receive to the Title IX Coordinator.  This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I must [report the information to the Title IX Coordinator](https://cm.maxient.com/reportingform.php?UNCCharlotte).  Although I have to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint.  Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can contact any of the following on-campus resources, who are not required to report the incident to the Title IX Coordinator: (1) University Counseling Center ([counselingcenter.uncc.edu](http://counselingcenter.uncc.edu/), 7-0311); (2) Student Health Center ([studenthealth.uncc.edu](http://studenthealth.uncc.edu/), 7-7400); or (3) Center for Wellness Promotion ([wellness.uncc.edu](http://wellness.uncc.edu/), 7-7407).  Additional information about your options is also available at [titleix.uncc.edu](http://titleix.uncc.edu/) under the “Students” tab.

**RELIGIOUS HOLIDAY OBSERVANCES**

The University of North Carolina at Charlotte is committed to diversity, nondiscrimination and inclusiveness, and to supporting its students, regardless of religious affiliation or non-affiliation, in accordance with state and federal laws and regulations. UNC Charlotte provides reasonable accommodations, including a minimum of two excused absences each academic year, for religious observances required by a student’s religious practice or belief. Such reasonable accommodations must be requested in accordance with the procedures in the Policy, and include the opportunity for the student to make up any tests or other work missed due to an excused absence for a religious observance. It is the obligation of students to provide faculty with reasonable notice of the dates of religious observances on which they will be absent by submitting a Request for Religious Accommodation Form to their instructor prior to the census date for enrollment for a given semester. The census date for each semester (typically the tenth day of instruction) can be found in UNC Charlotte’s academic calendar.

A student who submits a Request for Religious Accommodation Form after the census date must show good cause for the late submission, and the late submission itself may be taken into account in determining whether the student has a religious practice or belief requiring accommodation and whether granting the request would create undue hardship. If there is no consensus on a reasonable accommodation, either party or both should seek the advice of the department chair. In those cases where a request for a religious accommodation is denied by the instructor, and there is no resolution through discussion with the department chair, the student may pursue a grievance under UNC Charlotte’s Student Grievance Procedure. Where a timely request is made by the student but denied by the instructor, the grievance process shall be expedited as much as reasonably possible to ensure that a student pursuing a religious accommodation is not unduly disadvantaged by the passage of time. Failure to comply with this Policy is a violation of University Policy and subject to disciplinary action in accordance with Policy Statement #25, Violation of University Policy.

**CLASSROOM ETIQUETTE**

*Cell Phones*: Cell phones should be on silent during class, and, more importantly, I do not want to see them (i.e., keep them in your pockets, not on your desk).

If this rule is violated, I will first ask the offending student to put their cell phone away or to make it silent (if it rings during class). If the rule is violated a second time, the student’s grade will be reduced by a whole letter grade (an A will become a B).

*Laptops:* Laptops are permitted but only for academic-related purposes. If a student is found to be checking Facebook during class, or simply surfing the internet, I reserve the right to revoke this privilege for the entire class.

**WANT THE CLIFF’S NOTES? IN ORDER TO SUCCEED…**

* Come to class as often as humanly possible, on time, ready to listen and contribute.
* Read the material and prepare some insightful comments or questions.
* Respect me, your fellow classmates, and yourself.
* Do not get behind, and do not wait until the last minute to study for exams or to complete assignments.
* Do not be afraid to ask for help if there is something you truly do not understand.

**FINAL NOTE**

This syllabus is meant to be interpreted as a living document. If at any time during the semester I feel the need to change sections of the syllabus to adapt to changing conditions of the classroom, or in the interest of time, I will write a revised version of this syllabus and upload it to Canvas.

**SCHEDULE**

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| **Session** | **Date** | **Subject** | **Readings** |
| 1 | 08/22/23 | **Course Introduction** | *Chapter 1 (Huntington-Klein)* |
| 2 | 08/29/23 | **RStudio & RMarkdown Tutorial** | *Materials on Canvas*  *Chapter 1 (Greenwood)* |
| 3 | 09/05/23 | **Central Tendency & Dispersion** | *Chapter 3 (Huntington-Klein)* |
| 4 | 09/12/23 | **Statistical Inference & the Binomial Distribution** | *Chapter 2.1-2.10 (Cunningham)* |
| 5 | 09/19/23 | **Inference with Two Qualitative Variables** | *Chapter 5 (Greenwood)* |
| 6 | 09/26/23 | **Normal Distribution & One-Sample Hypothesis Testing (Asynch)** | *Chapter 2 (2.1-2.2, 2.5, 2.9) (Greenwood)* |
| 7 | 10/03/23 | **(Continued)** | *Chapter 2 (2.1-2.2, 2.5, 2.9) (Greenwood)* |
| 8 | 10/10/23 | **Two-Sample Hypothesis Testing** | *Chapter 2 (2.5, 2.6) (Greenwood)* |
| 9 | 10/17/23 | **Analysis of Variance** | *Chapter 4 (Greenwood)* |
|  | 10/24/23 | **NO CLASS – Student Recess** |  |
| 10 | 10/31/23 | **Inference with Two Continuous Variables (Asynch)** | *Chapters 6 & 7 (Greenwood)* |
| 11 | 11/07/23 | **Multivariate Regression** | *Chapter 8 (8.1-8.12) (Greenwood)* |
| 12 | 11/14/23 | **(Continued; Asynch)** | *Chapter 8 (8.1-8.12) (Greenwood)* |
|  | 11/21/23 | **NO CLASS – Thanksgiving Break** |  |
| 13 | 11/28/23 | **Logistic Regression** | *Chapter 17 (17.1-17.2) (Dalpiaz)* |
| 14 | 12/05/23 | **TBD** |  |

\*\*\* The professor reserves the right to alter this schedule as needed. Notification of such changes will be made as early as possible.