

# CRIM5305: Data Analysis

Spring 2023

Online Asynchronous



**Course Instructor:** Dr. Caitlin S. Ducate

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**Office:** CAB 349A

**Office Hours:** Tuesdays and Thursdays from 10am-11am and **by appointment** (via [Zoom](#))

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## **Course Description:**

This course is an introduction to social science statistics used in criminological and criminal justice research. Through this course, you will learn how to summarize data, draw inferences about data, and test hypotheses with data. You will also learn how to use the statistical programming language R.

## **Course Objectives:**

By the end of this course, you should be able to:

1. Summarize the properties of a sample using descriptive statistics
2. Infer features of a population using inferential statistics
3. Summarize and infer the relationships between variables
4. Conduct appropriate statistical technique(s) for a given variable or set of variables, using the statistical program R, and interpret the output

## **Required texts:**

Bachman, R. D., Paternoster, R., & Wilson, T. H. (2021). *Statistics for criminology and criminal justice* (5<sup>th</sup> Ed.). SAGE Publications.

## **Recommended texts:**

Gillespie, B. J., Hibbert, K. C., & Wagner III, W. E. (2020). *A Guide to R for Social and Behavioral Science Statistics*. SAGE Publications.

*Last Updated: Jan 09, 2022*

**Course Requirements & Grading:**

Points for the course are allocated as follows:

Assignments:	700 points
<u>Final Exam:</u>	<u>100 points</u>
<b>Total:</b>	<b>800 points</b>

**Assignments.**

- There will be fourteen (14) assignments worth 50 points each.
- Assignments will cover both theoretical and practical content from the course readings, lectures, and videos.
- Assignments will be submitted online via Blackboard. The assignment for each week will “unlock” (i.e., become available) on Monday and be due by **Sunday at 11:59pm**.

**Final Exam.**

- There will be one cumulative final exam worth 100 points each.
- The exam will be administered via Blackboard. It will be available to complete from Monday (05/08) at 8am CST to Thursday (05/11) at 11:59pm CST. Once you begin the exam, you cannot pause it.
- Because it is online, it is open-book, but you are expected to complete these exams *independently*—you may not work with a partner.

**Extra Credit.**

- Students who post solutions to questions posted by fellow students on the discussion board can earn up to **10 points** of **EXTRA CREDIT**
  - You will earn 1 point for each *original, meaningful* answer you provide to a fellow student
  - Original: Your answer/solution has not been previously suggested
  - Meaningful: Your answer/solution does more than merely agree with someone else
- Students cannot ask for ad hoc (individualized) extra credit opportunities.

Grade Minimum %									
<b>A+</b>	97.0	<b>B+</b>	87.0	<b>C+</b>	77.0	<b>D+</b>	67.0		
<b>A</b>	93.0	<b>B</b>	83.0	<b>C</b>	73.0	<b>D</b>	63.0	<b>F</b>	<60.0
<b>A-</b>	90.0	<b>B-</b>	80.0	<b>C-</b>	70.0	<b>D-</b>	60.0		

## **Course Policies and Procedures:**

**Contacting Me.** If you need to get in touch with me, send email to [cducate@tamusa.edu](mailto:cducate@tamusa.edu). **Please include the course number (CRIM5305) in the subject** of the email and use [proper email etiquette](#). I usually check my email twice a day between 10am and 4pm on weekdays and do not check email on the weekends. If I have not responded to your e-mail within 24 hours (excluding Sat and Sun), please send another e-mail with a reminder. *I will not respond to questions about information that can be found on the syllabus.*

**Blackboard.** I make heavy use of Blackboard in this class for both uploading material and communicating information and reminders. **Most communication from me will be through Blackboard Announcements.** You are responsible for keeping up with Blackboard notifications, so please check it daily.

**Office Hours.** This is a difficult course, so I encourage you to attend office hours. However, I expect you to come prepared. This means you should come with *clear* questions about the material you do not understand. If you have questions about the assignments, you must have the assignment open and with the work you've already tried available for me to review.

**Missed Work.** I realize COVID-19 continues to place difficult and unreasonable demands on people. I also realize that you may be living in a situation un conducive to studying, you may have care obligations, you may be working, etc. Although I expect you to try to manage *known* problems, some problems are hard to predict in advance. If you miss work due to an unforeseen problem, you need to let me know *within 24 hours* of the missed assignment unless you are physically unable to. In many cases, I will allow you to make up the work with or without a penalty, but you *must* let me know the reason for the missed work first.

**Contesting grades.** Students will have **1 week** to contest grades beginning on the day they are released. After that time period, all grades are final.

**Attendance.** Although this class occurs asynchronously online, your participation will be monitored weekly via the weekly work. For purposes of financial aid, etc., faculty are required to report nonattendance to the registrar's office. If you do not participate regularly in the course, you may be dropped administratively by either myself or the registrar's office.

**Technical issues.** Technical and logistical problems, such as being unable to access a computer, computer failure, problems with internet connections (such as speed or quality of the connection) or browser, failure to check that your assignments have properly uploaded, etc., will not automatically result in remedies favorable to students. Even if the technical or logistical problem is not your fault, you are not guaranteed a retake or "do-over" for the assignment. Any such issues are

dealt with on a case-by-case basis. Further, *to avoid last minute problems*, it is highly recommended that you complete readings, videos, and assignments as *early as possible* during each module.

If you have a question about using Blackboard as a student, **please check the help page first**: <https://tinyurl.com/tamusastudentbbhelp>. If you have difficulty accessing Blackboard or using, please contact IT here: <https://www.tamusa.edu/information-technology-services/index.html>. You can **send them an email** at [helpdesk@tamusa.edu](mailto:helpdesk@tamusa.edu) or **call them** at (210) 784-4357.

### **Expectations:**

**Academic Integrity.** As a TAMUSA student, I expect you to follow the Student Code of Conduct (see Section 14 of the [Student Handbook](#)). **When you submit an assignment with your name on it, you are signifying that the work contained therein is yours and only yours** unless otherwise cited or referenced. This includes both online assignments and exams. All suspected violations of the Code will be reported and handled according to University policies. Sanctions for academic misconduct may include a failing grade on the assignment, reduction in your final course grade, and a failing grade in the course, among other possibilities. If you are unsure about the expectations for completing an assignment or taking a test or exam, be sure to seek clarification beforehand.

**Independent Problem-Solving.** It is my job to teach you, but it is your job to learn. Part of learning, especially when coding, involves trying to solve problems yourself. As such, **I expect you to become comfortable using Google to search for solutions to problems.** In fact, most of being a good coder is just Googling problems. I have been coding in R for 8 years, and I still rely heavily on Google: “Move column to end of dataset R,” “Merge dataset R.” If you find yourself constantly Googling when coding, that means you are doing something right.

**Perseverance.** Both data analysis and programming in R come with steep learning curves. *Everyone* struggles at first. As Master’s students, I expect you to not be deterred by the initial discomfort you will inevitably experience at first. Instead, I expect you to persevere in the face of the discomfort, to wrestle with the material until it finally makes sense. **Anyone can learn statistics**; it just requires **practice**.

## Course Schedule:

This course schedule is tentative and subject to change. All changes will be announced via Blackboard. Chapters listed refer to the required book, *Statistics for Criminology & Criminal Justice* (5th Ed.). Additional required materials (e.g., readings, lectures, videos) will be posted on Blackboard.

WEEK	DATE	TOPICS	READING	WORK DUE
1	01.17 - 01.22	Intro to Course; Installing R & RStudio		Assignment 1
2	01/23 - 01/29	Intro to R & RStudio	Chapter 1	Assignment 2
3	01.30 - 02.05	Sampling and Aggregation	Chapter 2	Assignment 3
4	02.06 - 02.12	Data Distributions and Graphing	Chapter 3	Assignment 4
5	02.13 - 02.19	Measures of Central Tendency	Chapter 4	Assignment 5
6	02.20 - 02.26	Measures of Dispersion	Chapter 5	Assignment 6
7	02.27 - 03.05	Probability Theory; Hypothesis Testing	Chapter 6	Assignment 7
8	03.06 - 03.12	Review Week		Assignment 8
9	03.13 - 03.19	NO CLASS – SPRING BREAK		
10	03.20 - 03.26	Point Estimation; Confidence Intervals	Chapter 7	Assignment 9
11	03.27 - 04.02	One Population Hypothesis Tests	Chapter 8	Assignment 10
12	04.03 - 04.09	Hypothesis Tests with Categorical Data	Chapter 9	Assignment 11
13	04.10 - 04.16	Two Population Hypothesis Tests	Chapter 10	Assignment 12
14	04.17 - 04.23	Bivariate Correlations & Regressions	Chapter 12	Assignment 13
15	04.24 - 04.30	Multiple OLS Regression	Chapter 13	Assignment 14
16	05.01 - 05.07	Review Week		
17	05.08 - 05.11	Final Exam		