

Data Analysis & Statistics
SBS 204 (QA)
PS/EC/GCS/UES/SO
Spring 2021
TTh 9:30 am – 10:50 am
Lab (online): Wed 11:00 am – 12:20 pm
Office Hours: Wednesday 10:00 am – 11:00 am & 1:00 pm – 2:00 pm or by appointment

Instructor: Dr. Katie McIntyre

Pronouns: She/her/hers

Email: knmcinty@bsc.edu

Office: Harbert 211

Office Hours: W 12:30-1:30, T 2:00-3:00, or by appointment

Teacher's Assistant: Jacqueline Lamars

Email: jlamars@bsc.edu

(This syllabus is subject to change per the instructor's discretion)

Course Description

There is the quote “There are three kinds of liars; liars, damned liars, and statisticians” – either Desraeli or Twain. Statistics is not manipulating numbers to redefine truth. Statistics, as applied in the social sciences, is the art of reducing complicated numbers into clear and accurate descriptions and predictions of social realities. I prefer the fictional quote from *The Crown* “I’m happiest with numbers. You can trust numbers. There’s no mystery or deception or allegory. You know where you stand. What you see is what you get” – Harold Wilson. Many students are terrified of statistics, just remember: There’s no mystery, no deception. I trust numbers and your ability to understand them. This course will teach you the basics of statistics to better evaluate the arguments made by others, read professional literature, as well as the applicable skill of managing data using statistical software.

Course Objectives

- Achieve a basic statistical literacy and understand the fundamentals of statistical analysis
 - Levels of measurement, measure of central tendency and variability, hypothesis testing, t-tests, chi-square, regression
- Evaluate, critique, and describe data
- Be familiar with Jamovi (R) statistical software for data management and analysis
- Effectively communicate quantitative findings in written format & visually

Required Text & Materials

Free items:

Diez, David M., Christopher D. Barr, and Mine Cetinkaya-Rundel. 2015. *OpenIntro Statistics*

Get here: openintro.org/os

Jamovi data software (we will download this during lab, please do not do this ahead of time).

Cost based items:

Basic calculator with square and square root functions (NOT A CELL PHONE)

flash drive or cloud-based server

3-ring binder for the course (optional dividers or other organizational options)

Course Policies

1. **Attendance:** You are expected to attend each class. This course material builds on previous classes, all classes are important to your ability to meet the course objectives. Up to three absences throughout the semester will be tolerated without affecting your grade. If you think this will become an issue for you, please get with Dr. McIntyre before Tuesday, February 16th to discuss taking a different section of this course. If you must be absent from class for any reason, you are responsible for all information provided in class, including all announcements and assignments made during your absence. You should begin by asking a classmate, then the TA, then Dr. McIntyre. If you are absent due to quarantine you must make arrangements before class to be included in a zoom call. If you are absent due to having COVID your absences will not harm your overall grade. You are still responsible for making up work, however this will be coordinated through yourself, Dr. McIntyre and her TA.
2. **Technology:** Cellphones, laptops, tablets, etc. should never be used during class unless otherwise specified by the professor that it is okay to use them for course-related information. Any and all violations of this policy will have a negative impact on your in-class participation grade. You will be required to use a computer for lab as our classes are virtual through Zoom.
 - a. **Jamovi:** Jamovi is a free software that creates a “point-and-click” experience for the code-based software R. You will download this during lab, please do not download this before lab. By the end of the course, you will be proficient in using Jamovi, do not expect yourself to be proficient during the first lab. The labs are built like the course, they build up a basis of knowledge. Breathe, everything will be fine.
 - b. **Moodle:** Students are responsible for checking Moodle for course readings, assignments, and announcements. Work that is turned in late because of not checking Moodle is the responsibility of the student. You are also required to check your grades on Moodle to verify that the correct grades are recorded for your completed work. If you come across a discrepancy, please let Dr. McIntyre know ASAP. Moodle works best using Chrome or Firefox, please – please – do not use Internet Explorer. It just makes Dr. McIntyre sad to see and she’ll

probably need additional time discussing with you why you shouldn't use Internet Explorer.

- c. **Zoom:** We will use Zoom as the virtual classroom for the lab. Using the Zoom app on your cellphone will not be helpful for this course. We will be using Zoom so I can help you complete your labs, your labs will not be able to be completed without a computer. Secondly, in the event you are quarantined due to possible exposure you will need to attend class virtually through Zoom. It is your responsibility to inform Dr. McIntyre that you cannot attend class in-person so she can set up a zoom for that day's lecture. You should inform Dr. McIntyre at least an hour prior to class otherwise you will be considered absent.
3. **Submission of Assignments:** All assignments should be turned in electronically via Turnitin on Moodle. Dr. McIntyre will not accept assignments that are emailed to her however, if Moodle is not cooperating or you are submitting at the literal last second and Moodle does not allow you to submit you may email it. Do not ask permission to email the assignment. Just email it so it is timestamped. Asking for forgiveness is better than permission when submitting assignments at the 11th hour.

The only files accepted for assignments are word and pdf. Microsoft Office 365 is available for free download to all current students. Sign into the IT Helpdesk webpage with your BSC user name and password to download the software. All other file forms need to be converted to pdf.

4. **Make-Up Exams and Presentations:** Make-up exams and presentations are only permitted in rare circumstances such as illness, family emergency, or participation in a BSC-sponsored activity with proper documentation. **Under these circumstances, it is the student's responsibility to communicate with the professor BEFORE the exam or presentation to make alternative arrangements.**
5. **Late Work:** Is not accepted. It is the professor's discretion to accept late work and in the (unlikely) event it is accepted, late work may be taxed with a point deduction. Under rare circumstances such as illness, family emergency, or participation in a BSC-sponsored activity, it is the student's responsibility to communicate with the professor ASAP. With proper documentation, these absences will be considered "excused." Missing class when an assignment is due (even with acceptable documentation) does not excuse it from being turned in late – it is the responsibility of the student to make alternative arrangements to turn the paper in by its due date.
6. **Academic Integrity:** BSC Honor Code states "As a member of the student body of Birmingham-Southern College, I realize my responsibility to the traditions of the institutions, to my fellow students and to myself, I recognize the significance of the

Honor System, and I pledge that I will not lie, cheat, or steal as a member of the Birmingham-Southern College community.”

Any misconduct, unethical behavior, or academic dishonesty will not be tolerated. This includes, but is not limited to, cheating, lying, stealing, plagiarism, harassment, and the creation of an unsafe or threatening learning environment. The student must document all sources of information. Credit must be given when using the ideas of others using **ASA citation style**. It is the responsibility of the student to ensure work is original in nature and when unsure how to properly cite outside work, should contact the professor or TA ASAP. All assignments in this course should be completed **independently** unless otherwise specified. Any suspected violation of the BSC Honor Code will be taken seriously and immediately reported.

Statement of Non-Discrimination: No person shall, on the basis of age, race, religion, gender, sexuality orientation, national origin or disability, be excluded from participation in, or be denied the benefits of, or be subjected to discrimination. Please notify Dr. McIntyre in advance if there is a conflict. Religious beliefs will be reasonably accommodated with respect to all examinations and other academic requirements. Please notify Dr. McIntyre in advance if there is a conflict.

Accessibility/ADA

If you are registered for academic accommodations, please make an appointment with me as soon as possible to discuss accommodations that may be necessary. During this discussion you are not expected to disclose any details concerning your disability though you may discuss the details at your discretion. Visit the [Office of Accessibility](#) for additional information or contact Angela Smith at awsmith@bsc.edu If you have a disability but have not contacted the Director of Counseling & Health Services, please call 226-4717 or visit Counseling & Health Services in the Norton Campus Center to do so ASAP.

Title IX

Birmingham-Southern College is committed to the creation and maintenance of a safe learning environment for students and the campus community. The College forbids any type of sexual or gender-based misconduct among its students, faculty, and staff. The College encourages all members of the academic community to report suspected sexual and gender-based misconduct to the appropriate authorities so that it can be investigated, remedied, and eliminated. Such misconduct is prohibited whether the actor is a student, faculty member, staff member, contractor, visitor, or other member of the College community. BSC forbids retaliation against any person who has opposed, reported, or participated in an investigation concerning sexual or gender-based misconduct. In accordance with federal policy all College employees are required to report information related to discrimination and harassment which includes, but is not limited to, sexual

assault, relationship violence, stalking, and sexual harassment. See [BSC Title IX](#) for more information.

7. **Contact:** All correspondence for this course will be done through the BSC email accounts. This address is already programmed into the course and alternate address are unable to be created. It is the responsibility of the student to check this email for all course correspondence. Messaging through Moodle is not sufficient. This is intranet not internet (think of it like trying to email through Instagram DMs. You'll only see those if you look at your insta DMs).

Email is the best way to reach me. I check email often and attempt to respond in a timely fashion. Please note, however, that I may not respond within the same day to email sent after 5pm or on weekends.

I'm here to help! I am available via email, during office hours, and by appointment and will designate class time for material review and student questions. Ask questions early – do not wait until the last minute to express concern over your understanding of the material. My office is open for any and all conversation, do not limit yourself to specific course questions. This is what office hours are for!

I'm not the only one here to help you.

First-Year Student Success Advisor 205-226-7709

[The Writing Center](#) and [Tutoring Lab](#)

Counseling Services 205-226-4717

Crisis Center of Birmingham 205-323-7777

Course Requirements

Participation: This will be measured through attendance and student participation in in-class work. Class is structured as follows, lecture Tuesday, lab Wednesday, practice work Thursday. PLEASE BE ON TIME TO CLASS.

Homework: There will be a total of 9 homework assignments, 8 will be counted toward your grade. You will either turn in 8 homework assignments or I will drop your lowest homework assignment. You will bring your completed HW to class each Thursday to be marked. To receive your full grade, you must include them in your binder that you will turn in before each exam.

In-Class Work: You will be partnered at the beginning of the semester, you and your partner will work on the in-class assignments together, helping each other work through understanding the material. There will be 9 group assignments, I will drop your lowest score.

Exams: There will be three exams throughout the semester. Each exam will be worth 150 points each.

Jamovi Labs: There will be 10 lab assignments throughout the semester that will include data analysis using the Jamovi software.

Extra credit: Maintaining your stats notebook. Your notebook should include notes, homework, labs, and exams. If you maintain your notebook all semester (each exam you will be turning in your notebook and will get it back after turning your exam in) you will receive a bump in your overall grade. For example, if your final grade is a B- you will receive a B+, if your final grade was a D+ you receive a C, if your final grade was a B+ you will receive an A.

Grading:

Assignment	Points	%
Participation	50	5
Homework	100	10
In-Class Work	100	10
Exams	450	45
Labs	300	30
TOTAL	1000	100

Grading Scale:

Excellent	A	93-100%	Competent	C	73-77%
	A-	90-92%		C-	70-72%
	B+	88-89%		D+	68-69%
Superior	B	83-87%	Marginal	D	63-67%
	B-	80-82%		D-	60-62%
	C+	78-79%		F	0-59%

Class Schedule: The attached class schedule is provided to indicate the dates on which topics will be discussed and the assigned readings for each class. Please see Moodle for all homework assignments.

Part I	Topic	Readings
Tuesday 2/2	Syllabus Day	
Thursday 2/4	Intro to Statistics	1.2, 1.3
Tuesday 2/9	Visualizing Data	2.1.1, 2.1.3, 2.2.1-2.2.5
Thursday 2/11		
Tuesday 2/16	Central Tendency	2.1.2, 2.1.5
Thursday 2/18		
Tuesday 2/23	Variability	2.1.4, 2.1.6
Thursday 2/25		
Tuesday 3/2	Exam 1	
Thursday 3/4	Mental Health Day	Find time for yourself

Part II	Topic	Readings
Tuesday 3/9	Normal Distribution	4.1.1-4.1.5
Thursday 3/11		
Tuesday 3/16	Sampling Distribution	5.1.1-5.1.3, 5.2.1-5.2.3
Thursday 3/18		
Tuesday 3/23	Hypothesis Testing	5.3 (whole section)
Thursday 3/25		
Tuesday 3/30	t-Tests	7.1.3-7.1.5, 7.3.1-7.3.3
Thursday 4/1		
Tuesday 4/6	Exam Prep	
Thursday 4/8	Exam 2	

Part III	Topic	Readings
Tuesday 4/13	Chi-Square	6.3 (whole section)
Thursday 4/15		
Tuesday 4/20	Regression	8.1.1, 8.1.3-8.1.4, 8.2.1-8.2.4
Thursday 4/22		
Tuesday 4/27	Presenting Data	
Thursday 4/29	HONORS DAY	
Friday 5/7 @ 9am	Exam 3	

Lab Schedule: The attached lab schedule is provided to indicate the dates on which topics will be applied. Please see Moodle for all lab assignments.

Labs	Topic
Wednesday 2/3	Jamovi, Basics, Organizing
Wednesday 2/10	Data selection & visualization
Wednesday 2/17	Central Tendency
Wednesday 2/24	Variability & Standard Deviation
Wednesday 3/4	Descriptive Tables
Wednesday 3/10	z-scores
Wednesday 3/17	Confidence Intervals
Wednesday 3/24	Mental Health Day
Wednesday 3/31	t-Tests
Wednesday 4/7	Catch-up
Wednesday 4/14	Chi-square
Wednesday 4/21	Linear Regression
Wednesday 4/28	Graphs & Presenting Data