STA 2122 Statistics for Behavioral and Social Sciences

Section: U03

In Person

Fall Term 2023

Course Meeting Information

Classes are scheduled from 12:00 - 12:50 PM Mondays, Wednesdays, and Fridays in PC 438.

Professor Information

Dane McGuckian

Contact: mcguckd@fiu.edu

Phone: 305.348.2741

Website: https://faculty.fiu.edu/~mcguckd/index.htm

Office: DM 406b

Office Hours:
Mondays, Wednesdays, & Fridays from 1:00 - 1:50 or by appointment in DM 406B.
Please email me in advance to let me know you are going to attend office hours to ensure I don't step out and miss you.

Course Description and Purpose
Statistics is widely used in business, government, and academia to make decisions based on quantitative reasoning. Statistics gives the practitioner quantitative methods to describe the population of interest, and it provides a means to estimate, and to make inference about the value of unknown parameters of the population being considered. This course is designed to provide undergraduate students with an introduction to descriptive statistics, probability, sampling distributions, and some of the methods of statistical estimation and inference. Additionally, it will lay the foundation for a more in-depth study of statistical methods and their use in decision making.

Course Goals

Upon completion of this Introductory Statistics course, students should be able to demonstrate an understanding of the use and classification of different types of data. They should have begun to develop an ability to use statistical thinking when problem solving. They should be familiar with several methods of describing sets of data. They will be able to calculate probability. They will be familiar with the attributes of discrete and continuous random variables and their probability distributions. Students will be able to describe the sampling distribution for the sample mean. They will be able to perform estimation with confidence intervals based on a single sample, and they will know how to perform tests of hypothesis based on a single sample. Additionally, they will be familiar with the concepts of margin of error, confidence, significance, type I and type II errors.

Student Learning Outcomes/Objectives

Students will be able to:

- Understand Statistics as a branch of science.

- Discuss basic concepts: data, population, sample, census, surveys.

- Discuss types of data and simple random sampling.

- Discuss the role of statistics in the scientific method.
• Construct frequency tables and graphs for qualitative and quantitative data.

• Find measures of central tendency and dispersion for quantitative data.

• Calculate measures of relative standing.

• Discuss the basic concepts in probability: random experiment, sample space, sample points, events, and Venn diagrams.

• Define the probability of an event.

• Define the intersection, union and complement of events.

• Use probability rules to calculate the probability of a given event.

• Define mutually exclusive events.

• Use conditional probabilities to show two events are independent.

• Define a random variable.

• Find probability distributions for discrete random variables.

• Compute the mean and variance of a discrete random variable.

• Give the characteristics of a binomial experiment and random variable.

• Use the binomial probability formula to find the probability of a success in a binomial experiment.

• Define probability distributions for continuous random variables with emphasis on
the normal distribution.

- Use the standard normal probability table to find probabilities and z-values corresponding to a given percentile.

- Define inferential statistics.

- Define parameters, statistics and sampling distributions.

- Determine the sampling distribution of the sample mean.

- State the Central Limit Theorem.

- Define interval estimators and confidence.

- Discuss the Student t probability distribution.

- Compute confidence intervals for a population mean $\mu$ based on both large and small samples.

- Compute confidence intervals for a population proportion $p$ for large samples.

- Discuss the elements of a test of hypothesis.

- Define the rejection region for a test of hypothesis using critical values.

- Define Type I and Type II errors.

- Define the significance level of a hypothesis test.

- Define and calculate the p-value for a hypothesis test.
State the decision rule when using p-value.

Perform tests of hypotheses about a single population mean using large or small samples.

Perform tests of hypothesis about a single population proportion using a large sample.

**Expectations of the Course**

**During the Term Students are expected to:**

Review the in-class examples before starting your homework.

Complete the homework on schedule.

Get help on what you couldn't do in the homework.

Review before the exam, do not cram!

**EXAM DAYS:**

Everyone needs to have a calculator, pen, photo ID, and any needed formulas and tables from our website (I do not hand out tables and formula cards). The person sitting next to you should not have the same exam version that you have. I will drop a stack of pre-sorted exams at the end of each row. As you pass them down to the end of the row you will make sure your neighbor has a different exam version than yourself. You will turn in your exam, scrap paper, answers, and formula sheet. It is important that you place your answer sheet in the pile with the first letter of your last name above it. The answer sheet should have no work on it—only answers. Do not erase your answers, if you wish to change an answer cross it out and write the new answer directly next to the crossed-out answer. Be prepared to show your ID when turning in your test.

**Assignments**
The grade for this course is based solely on examinations. In order to prepare for the exams, you must read the notes, attend class, watch the instructional videos or the lectures (live) in class, and complete the course homework exercises. Completing the homework exercises is the most important piece of your preparation for the exams. Students that do not complete the homework do not perform well on the exams.

**You do not turn in your homework.** Homework is designed to provide practice that is free from penalty. Solutions are provided for every exercise in order to provide immediate feedback on your level of mastery. If you miss a homework question, you should ask for help in class or during office hours.

**Mastery Math Lab** You have a one-hour requirement in the Mastery Math Lab every week. The week runs Monday through Friday, and lab hours need to be completed each week by Friday at the close of the lab. Your time in the lab can be continuous or broken into smaller time periods. The total time you spend in the lab will be recorded and if it is less than 1 hours = 60 minutes (59 is smaller than 60), you cannot get credit for that week. (Exception: Weeks 1 and 2 may be combined for a total of 2 hours.) We also do **not** give partial credit for earning less than required 1 hour. The hours you spend in the lab cannot be “rolled over” to the next period; this means that if you spend 5 hours one week, you are still required to spend a minimum of 1 hour in the next week. We encourage you to spend as much time as you need to master the material for your course. While we record your hours, you should also keep track of them on your own so that you can be aware of how much time you have spent. There is a monitor in the lab that will tell you how many minutes you have accrued each week. You will need to sign out whenever you leave the lab. This includes leaving to take a phone call or to visit the restroom.

Lab hours at MMC Campus (GL 266):

- **Monday 9am - 8pm**
- **Tuesday 9am - 8pm**
- **Wednesday 9am - 8pm**
- **Thursday 9am – 3:00pm and 5pm – 8pm**
Friday 9am - 8pm

The lab will be open on Sundays from 1pm - 6pm both in person and via Zoom for additional help, but attendance on Sundays will not count toward your lab hours for the week.

Assessments

There will be three exams and a cumulative final exam (all equally weighted at 100 points).

Exams are timed.

A missed exam will result in a zero for that exam.

There are NO makeup exams, and everyone must take the final.

If your final exam grade is higher than the lowest of your first three exam grades, I will double your final exam grade to replace the lowest test grade.

If you have missed one exam the final will be doubled to replace that missing grade.

If you have more than one emergency during the term that causes you to miss more than one exam you are encouraged to drop the course.

Grading

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Content Covered</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>Chapters 1 and 2</td>
<td>24.1%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>Chapters 3 and 4</td>
<td>24.1%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Chapters 5 and 6</td>
<td>24.1%</td>
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</tbody>
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Assignment Weights

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Content Covered</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>Chapters 1 through 8 (cumulative)</td>
<td>24.1%</td>
</tr>
<tr>
<td>Lab Points</td>
<td>15 pts (1 hour per week = 1 pt per week)</td>
<td>3.6%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
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*If your final exam grade is higher than the lowest of your first three exam grades, I will double your final exam grade to replace the lowest test grade. If you have missed one exam the final will be doubled to replace that missing grade.

Your final letter grade is based on the sum of points earned on your four exams. The maximum sum of points possible from the four exams is 400. The following table shows the point total ranges necessary to earn each letter grade.

<table>
<thead>
<tr>
<th>Letter Grade Distribution Table</th>
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<tbody>
<tr>
<td>Letter</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B+</td>
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Textbook and Course Materials for Purchase

If no materials listed, no items are needed.

**No Textbook is Required**

**Required/Recommended:** No Additional Resources are Required

**Authors:** Dane McGuckian

**Publisher:** Dane McGuckian

**Publication Date:** 01/2011

**Copyright Date:** 01/2011

**ISBN 10:** 1002003004
Notes: Everything you need for the course can be found inside the course or at my website for free.

Panther Book Pack Undergraduate Rental Program
FIU has implemented the Panther Book Pack rental program, which provides your required print and digital course materials at a flat rate of $20 per undergraduate credit hour. When you registered for your classes this session, you were notified via email of the required course materials that are included in the Panther Book Pack. The Panther Book Pack program applies to all undergraduate credit hours per academic session. I recommend that you review the pricing for all materials across your classes this session compared to the Panther Book Pack flat rate. If the Panther Book Pack is not your best option, you may opt out up to three days after the add/drop deadline. You may opt back into the Panther Book Pack up to three days after the add/drop deadline. If you do not opt out of the Panther Book Pack rental program, you will be charged $20 per credit hour and the course materials will be reserved for you for the undergraduate courses for which you are registered. For more details, visit bookpack.fiu.edu

Other Course Materials and Open Educational Resources (OER)
To get the most out of this course, students should make use of my website STATSprofessor.com.

https://www.statsprofessor.com/

Policies
Please review the FIU's Policies webpage. The policies webpage contains essential information regarding guidelines relevant to all courses at FIU, as well as additional information about acceptable netiquette for online courses. For additional information, please visit FIU's Policy and Procedure Library.

As a member of the FIU community, you are expected to be knowledgeable about the behavioral expectations set forth in the FIU Student Conduct and Honor Code.
Academic Integrity

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Conduct and Honor Code.

Academic Misconduct includes:

Cheating

- The unauthorized use of any materials, information, study aids or assistance from another person on any academic assignment or exercise, unless explicitly authorized by the course Instructor;
- Assisting another student in the unauthorized use of any materials, information, study aids, unless explicitly authorized by the Instructor; and
- Having a substitute complete any academic assignment or completing an academic assignment for someone else, either paid or unpaid;

Plagiarism

- The deliberate use and appropriation of another are work without any indication of the source and the representation of such work as the Student's own.
- Assisting another student in the deliberate use and appropriation of another's work without any indication of the source and the representation of such work as the student's own.
Learn more about the academic integrity policies and procedures as well as student resources that can help you prepare for a successful semester.

Panthers Care & Counseling and Psychological Services (CAPS)

If you are looking for help for yourself or a fellow classmate, Panthers Care encourages you to express any concerns you may come across as it relates to any personal behavior concerns or worries you have, for the classmate's well-being or yours; you are encouraged to share your concerns with FIU's Panthers Care website.

Counseling and Psychological Services (CAPS) offers free and confidential help for anxiety, depression, stress, and other concerns that life brings. Professional counselors are available for same-day appointments. Don't wait to call (305) 348-2277 to set up a time to talk or visit the online self-help portal.

Inclusivity

This course will serve to embrace the diversity and inclusivity found within Florida International University. We appreciate and respect diversity, equality, equity, cooperativeness, community, and sustainability within our online courses. We are committed to the ongoing education of our students and their participation within the course regardless of gender, ethnicity, age, sexual orientation, geographical location, religion, and disability. We strive in encouraging collaboration by preparing our students to value the differences in others. At the core of our intentions is the encouragement of acceptance and appreciation of differences within our student population and community.