**The George Washington University**

**Department of Statistics**

Syllabus *for* **STAT 1051.13:   Introduction Statistics for Business and Economics:**

**Fall Semester, 2023. This Course runs from August to December, 2023.**

**Instructor**: Dr. Tuamokumo  (Dr. T.)

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**Phone**: 301 204 7364

**Office:** Room 731 Phillips Hall (Arts and Science Building)

**Office Hours**: 5:00 – 6:00 PM on Mondays and Wednesdays

**Class meets** in Room 210 Funger Hall, Located at 2201 G St. NW, DC on Mondays and Wednesdays:  6:10  - 7:25 PM

## Course Materials:

1. Textbook required: STATISTICS for BUSINESS and ECONOMICS by McClave, Benson, and Sincich:  14$^{th}$ Edition. This textbook is obtained electronically as soon as you register for the MyStatLab through Pearson. You MUST therefore register for it. Having registered for it, you will now have access to the **online homework in MyStatLab** you will be doing and also have access to the Statcrunch software that we shall be using in analyzing data. You are NOT required to buy a hard copy textbook separately. **You will be provided with the Course ID. Therefore wait for further notice. The above must be done before classes begin.**

   You will have to enroll into MyStatLab through Blackboard and purchase it. The price is in the neighborhood of $150.

2. Calculator required:  TI-83 Plus or TI-84 Plus is required for quizzes and exams. It is a must that you have this particular calculator.
3. **Software**: Statcrunch will be used in analyzing data.


 I require that cell phones be turned off when class is in session and no texting as well.

**Classes will be held in-person on campus. Students are expected to attend these classes in-person on a consistent basis. There will be no option of participating remotely.**

**Recording of Lectures: I do intend to record my lectures through the lecture capture tool. If you happen to miss a class, it will be in your best interest to obtain class notes, referenced readings from a fellow student, and the recorded lecture.**

**Course Description**:

 Nearly every aspect and component of our culture, society, recreation, education, and lives are dependent upon, related to, and intertwined with statistics. The first part of the course (*Descriptive Statistics*) is designed to enable you to become more aware of the fundamental applications and uses of statistics in our society, and gain understanding on the basic principles of communicating information contained in data. The second part of the course (*Inferential Statistics*) is designed to lay the statistical foundation to conduct scientific inquiry and for pursuing research in business and social sciences. It is this part of the course that creates most of the 'mystery" associated with statistics and can be viewed as a preparation for taking one or more subsequent courses in statistics or research methods.

**Course Objective**:

At the end of the course, I expect that you shall have learnt and acquired knowledge in a variety of statistical concepts. You will be able to:

1. Define and describe variables and how they are measured.
2. Carry out graphical and numerical summaries of the data and be able to clearly interpret what information they contain.
3. Describe the center of distributions and how to measure it.
4. Describe variability and different ways we measure it.
5. Use sampling distributions to make inferences about a population.

6. Construct Confidence intervals and clearly explain what they say about the population.

7. Know how and when to use statistical tests (z-test, t-test), correctly interpret the results, and be able to make data-driven decisions.

 **Grading Weights**

| | | |
|---|---|---|
| 2 exams | (20% each) | 40% of course grade |
| Class quizzes (pop quizzes given randomly) | | 15% of course grade |
| Class Assigned Homework  (TA Grades Homework) | | 10% of course grade |

| | |
|---|---|
| MyStatLab Homework | 10% of course grade |
| Final exam | 25% of course grade |

**Homework**: Homework will be assigned in-class and **will** be collected for grading. Your homework will be collected every Monday of the week. Your grade on the homework will depend on neatness, completion, and correctness of the solutions. You will lose a lot of points, particularly, for sloppy presentation. Please present your work neatly for grading. Each homework assignment will be graded out of 20 points. It should be pointed out that a commitment to completing homework assignments on time, and in their entirety, aids students in successfully finishing the course. Online MySataLab homework will be graded by the computer.

**Quizzes**:  At the end of most class periods or while the lecture is in progress, a quiz of at most two problems that might take at most 10 minutes to do will be given. Each quiz will be graded out of 20 points. I'll drop your three lowest quiz grades before computing your final quiz grade. This is because you may miss one or two classes during the semester due to extenuating circumstances. **But note that if you missed three quizzes, then, you do not have any quizzes to drop. Your missed quizzes are your dropped quizzes. Note that as you signed up for the course, you have made a commitment to yourself.**

**In-Class Exams (40%)**:  There will be two in-class exams. Each exam will be graded out of 100 points. You can make up at most one exam due to extenuating circumstances. It is my observation that students, in most cases, perform relatively better when taking the test at the specified time, rather than later.  Please prepare to take the test always.

> *Tentative* **exam dates**:   #1:  Wednesday, September 20, 2023
>
> #2:   Wednesday, October 25, 2023

**Final Exam:**                             **December  (To be determined later)**

**Final Exam (25%):** The final exam is a mandatory, cumulative test (though will consist of mainly topics covered after exam #2) that will be given on the date and time stated above. The exam will cover all the topics presented in the semester. The exam will *not* be given to students at a time/day different from the one stated above. Be certain to consider the scheduling of this exam when making travel plans.

**Course Grades** (A,  A-,  B+, B,  B-,  C+,  C, C-,  D,  etc) will be earned.

| | |
|-------|-----|
| >= 94 | A |
| 90 – 93.9 | A- |
| 87 – 89.9 | B+ |
| 84 – 86.9 | B |
| 80 – 83.9 | B- |
| 77 – 79.9 | C+ |
| 74 – 76.9 | C |
| 70 – 73.9 | C- |
| 67 – 69.9 | D+ |
| 64 – 66.9 | D |
| 60 – 63.9 | D- |
| <60 | F |

**<span style="color:red">Academic Integrity</span>**:

Standards of academic conduct are governed by the University's Academic Integrity Code. By enrolling in the university and registering for this course, you acknowledge your familiarity with the Code and pledge to abide by it. All suspected violations of the Code will be immediately referred to the Office of the Dean. Disciplinary action, including the failure for the course, suspension, or dismissal, may result.

Additional Information about the code (i.e. acceptable forms of collaboration, definitions of plagiarism, use of sources including the Internet, and the adjudication process) can be found in a number of places, including the University's *Academic Regulations, Student Handbook*, and Academic Integrity Code website. If you have any questions about academic integrity or standards of conduct in this course, please discuss them with your instructor.

I am required to report cases of academic dishonesty to the dean of the College of Arts and Sciences. Students are required to be familiar with George Washington University's Academic Integrity Code. For additional information, please see, http://www.gwu.edu/~ntegrity/code.html

**Academic Support and Access Center**

In addition to using the resources available in this course's department, all students may take advantage of individual academic counseling, skill workshops, tutor referrals, Supplemental Instruction, and writing appointments in the Academic Support and Access Center.

*Students with Disabilities*: If you wish to receive accommodations for disability, please notify me with a letter from the *Disability Support Services (DSS)* office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. As accommodations are not retroactive, timely notification at the beginning of the semester, if possible, is requested. This course is intended to include all students irrespective of race, religion, gender or any other conditions. For additional information, please refer to: http://gwired.gwu.edu/dss/


*University Counseling Center (UCC)* **202-994-5300**

The Counseling Center offers counseling and consultations regarding personal concerns, self-help information, and connections to off-campus mental health resources. http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

**Center for Diversity & Inclusion**

The Center for Diversity and Inclusion is dedicated to enhancing LGBTQ, Multicultural, First Generation, and Women's experiences on campus and to advance GWU's commitment to respecting & valuing diversity by serving as a resource and liaison to students, staff, and faculty on issues of equity through education, outreach, and advocacy.


**Emergency Preparedness for Disruption of Classes**

In the event of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location. Students are responsible for checking their GWU e-mail regularly and keeping themselves informed of emergencies. In the event of an emergency, students should refer to the GWU Student Portal, the GWU Website for Emergency Preparedness and the GWU information line for general university-wide information, as well as contact their faculty and/or respective dean's office for course and school/ college-specific information.

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**The Recitation Classes will be held on ----- by a Teaching Assistant (TA) from:**

1. -----------    and
2. -----------

**You are required to attend at least one of these classes each week. These classes are held to further assist students on the material but they are not designed to do homework for students. Do not expect the TA to do homework for you.**

**Please always check *Blackboard* for announcements.**

# Course Outline

1. **Descriptive Statistics**       Chapter 2

2. Concept of Probability       Chapter 3

3. Random Variables   Chapter 4
   Discrete Random Variables (example, The Binomial Random Variable)
   Continuous random Variable (example, The Normal Random Variable)

 **Statistical Inference**

4. Sampling Distributions:  Chapter 5
    Sampling Distribution of the Sample Mean
    Sampling Distribution of the Sample Proportion
   The central Limit Theorem


5. Probability Problems on the Sample Mean and the Sample Proportion

6. Confidence Interval about the Population Mean:  Chapter 6
    a.  when the population standard deviation is **known** or Sample size is large
    b. when the population standard deviation is **unknown** or Sample size is small

7. Confidence Interval about the Population Proportion

8. Sample Size necessary for estimating the population mean

9. Sample Size necessary for estimating the population proportion

10. Confidence Interval for the Difference between Two Population Means:
     a. when the population standard deviations are **known** (or large samples)
     b. when the Population Standard deviation are **unknown** (or small samples)

11.  Hypothesis Testing (what is it?):  Chapter 7

12.  Hypothesis testing about the Population Mean:  Chapter 7
      a. when the population standard deviation is **known** (or large sample)
      b. when the population standard deviation is **unknown** (or small sample)

13. Hypothesis testing about the Difference between Two population Means: chapter 8
    a. when population standard deviations are **known** (or large samples)
    b. when the population standard deviations are **unknown** (or small samples)
14. Hypothesis Testing about the Population Proportion:  Chapter 8

15.  *p*-value (what is it?)   Chapter 7

16. Using *p*-value to draw conclusions in hypothesis testing in the above hypothesis testing cases

17.  Linear Regression Analysis and Correlation;   Chapter 11