Course Outline
STA 4322: Introduction to Mathematical Statistics II
Spring 2021

Instructor	Dr. B M Golam Kibria
Office	Remote Meeting (**Zoom only**)
Email	kibriag@fiu.edu
Web page	http://faculty.fiu.edu/~kibriag/

Remote Class Time and Place: Monday and Wednesday, 2:00 PM to 3:15 PM (Remote Meeting) @ ZOOM.

Remote Office Hours: Monday and Wednesday, 3:30 PM to 4:30 PM or by appointment.

Prerequisite: STA 4321: Introduction to Mathematical Statistics I or equivalent course.

Text: Mathematical Statistics with Applications, **7th Edition** by Dennis D. Wackerly, William Mendenhall III and Richard L. Scheaffer
Cengage Learning, USA
ISBN-13: 978-0-495-11081-1
ISBN-10: 0-495-11081-7
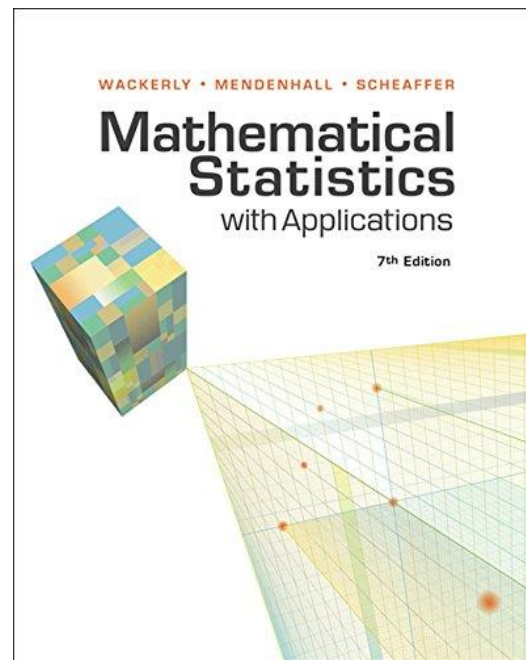
Course Descriptions: This is the second course in a two-semester sequence. The detailed course outlines are presented below:

7. Sampling Distribution: Distribution of statistics; sample mean and sample variance. The chi-squared, F and t distributions. Sampling distribution of order statistics. Joint distribution of order statistics.

8. Estimation and Confidence Intervals: Some properties of point estimators, some common unbiased point estimators, evaluating the goodness of a point estimator, confidence intervals, large sample confidence interval, selecting the sample size, small-sample confidence interval.

9. Properties of Point Estimators and Method of Estimation: Unbiasedness, relative efficiency, consistency, minimal sufficiency and minimum variance unbiased estimation (MVUE), the method of moments, the method of maximum likelihood.

10. Hypothesis Testing: Elements of a statistical test, common large-sample tests, calculation of type-I error, sample size for the Z-test, different ways of reporting the result of a test, attained significance levels or p-values, some comments on the theory of hypothesis testing, two-sample tests based on t-distributions, testing hypothesis concerning variances, power of tests, the Neyman-Pearson lemma, likelihood ratio tests. Analysis of contingency table, the Chi-Square goodness of fit test.

11. Linear Models and Estimation by Least Squares (optional): Linear regression and estimation by least squares method, method of least squares and its connection with maximum likelihood method under normality assumption, confidence intervals for parameters, prediction interval, Multiple Linear regression.

13. Analysis of Variance (optional): Experimental Design, one-way and two-way analysis of variance.

15. Nonparametric Tests (optional): Sign test, Signed-Rank test, Rank-Sum tests, Tests based on Runs, Rank correlation.

Note: A scientific calculator is required for this course. R-software and Excel will be used.

Course Evaluation: Tentatively the ighting scheme is as follows:

Assignments	20%
Midterm Exam II	20%
Midterm Exam III	20%
Final Exam	40%

Assignments: There will be several assignments for this course and will be available from FIU canvas. Some of the selected problems from each of the

assignments will be graded. You need to mail the pdf file of your assignment at kibriag@fiu.edu before due dates. Unfortunately no make up will be available for Assignments.

Examinations: There will be two midterm exams and one final exam (cumulative). The exams will be proctored by the **HonorLock** proctoring system. You will need a laptop or computer with a webcam for all exams. You will be allowed to use some note sheets. The *tentative Midterm and Final Exams dates* are as follows:

The first Midterm Exam will be held on February 17 (Wednesday), 2021 and exam covers the materials until February 15 (Monday), 2021.

The second Midterm Exam will be held on March 24 (Wednesday), 2021 and exam covers the materials until March 22 (Monday), 2021.

The Final Exam is cumulative and will be held on April 21 (Wednesday), 2021. Between 12:00 to 2:30 PM.

Students must bring a photo I.D. for each exam.

PS: You should not register in this class if your final exam conflicts with other course.

Note: Any complain about the grading of the midterm exams/assignments have to be done within a week after the corresponding exams/assignments.

Makeup Exams: No make-up exam will be given. However, if you miss **an exam due to a documented emergency**, your grade for the next exam (most probably final) will be used for the missed grade. All students are required to attend in the final exam. Failure to attend it will result in a grade of "F" for the course.

Grading Scale: The weighted average of the scores in the three exams will be converted to a percentage. The following scale will then be used to assign letter grades for the course.

Letter	Range (%)	Letter	Range (%)	Letter	Range (%)
A	90 - 100	B	80 - 83	C	67 - 73
A-	87 - 89	B-	77 - 79	D	60 - 66
B+	84 - 86	C+	74 - 76	F	0 - 60

Important Notes: Gardes will be given based on the performance of the course (Assignments, Mid terms and final exams) only. Unfortunately, no extra work will be given to improve the grade.

Incomplete: The incomplete (I) grade will be given ONLY to a student who has completed the bulk of the course works (**at least half of the course**) and is unable to complete the course due to a serious interruption not caused by the student's own negligence. **It is not a choice to have incomplete grade.**

Some Important Dates:

1. January 11 (Monday), 2021: Classes begin.

2. January 18 (Monday), 2021: Martin Luther King Holiday (University Closed**).**
3. January 19 (Tuesday), 2021: Last day to drop courses or withdraw from the University without incurring financial liability for tuition and fees
4. March 22 (Monday), 2021: Last day to drop a course with a DR grade. Last day to withdraw from the University with a WI grade.
5. Class end: April 14 (Wednesday), 2021
6. **Grades avaliable for students**: Thursday, April 29, 2021

Note: The instructor is not responsible about the above date or time. Students must review FIU Academic Calendar 2020-2021 for the above dates. **The instructor is also not responsible to add or drop a course. It is student's own choice.**

Important Note: This is not an online course, but I will be teaching remotely. All classes and exams will be available exactly like face to face classes. However, you will be writing your exam (handwritten) via on Honor Lock instead of in the class. After your exams are done, you will scan them and send me the pdf file of your exam paper via FIU email at kibriag@fiu.edu. Detailed about the exams will be posted before the corresponding exams.

Virtual Class Meetings

- We will meet on every Monday and Wednesday 2:00 PM to 3:15 PM through ZOOM. All students are expected to attend the class meeting. Link will be available inside FIU Canvas. OR I will post the link for zoom meeting on the **announcement on Canvas**.
- Test using Zoom before your first lecture or meeting.
- If you have headphones and a microphone, make sure they are working properly, especially make sure your microphone isn't producing feedback.

- You should have a camera (webcam) in your computer with very good internet connection.
- I strongly encourage you to turn on your camera during class meetings on Zoom, which might make it feel face-to-face meetings.
- During our class meetings, use the "chat" function on Zoom to ask questions, share your responses to the questions I pose, and share your comments about the day's lesson. Let's make our lessons and discussions as engaging and rich as possible!

FIU Canvas

- You will be able to access the course only through FIU Canvas.
- There will be several link under modules, for examples,
  Handout for each chapter.
  Assignments (there will be several assignments with due dates)
  Exams related (detailed about midterm exam I, II and final exam)
  Statistical tables (some necessary statistical tables
- **Announcements: Throughout the term, various announcements (course related with important information) will be posted. You must view them as soon as you can.**

Communications: Via FIU Canvas and FIU email, kibriag@fiu.edu. Email is the best way to communicate with me. I will try my best to reply emails very promptly. If you have any questions about the course materials, please email me so that I can adress your concerns as soon as possible.

Attendance: Students are expected to attend the zoom classes regularly. Students are encouraged to seek the instructor's help during office hours.

Note: The course outline provides a general plan/guide for the course only, however, deviation or some changes may be necessary. The instructor will assume the sole authority in all matters related to course content, students grading, and classroom procedures. No active beeper or cellular phones are allowed in classes. **You should not register in this class if your final exam conflicts with other course.**

Academic Misconduct: FIU defines academic misconduct in the Student Conduct and Honor Code (Code) as, "any act or omission by a Student, which violates the concept of academic integrity and undermines the academic mission of the University in violation of the Code." Code violations include, but are not limited to: academic dishonesty, bribery, cheating, commercial use, complicity, falsification, and plagiarism. The Code is available here: https://studentaffairs.fiu.edu/get-support/student-conduct-and-academic-integrity/student-conduct-and-honor-code/index.php