MGB-203B – Statistical Foundations for Business Analytics

PREREQUISITE: MGB/P/T 403A – Data Analysis for Managers

TERM: Spring Quarter 2024

LECTURES:

Schedule of meetings for MGB-203B-001

Date	Hours	Building	Room	Session Type
Sat 4/6/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 4/6/2024	1:30 PM - 4:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 4/20/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 4/20/2024	1:30 PM - 4:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 5/4/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 5/4/2024	1:30 PM - 4:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 5/18/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 5/18/2024	1:30 PM - 4:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 6/1/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 6/1/2024	1:30 PM - 4:30 PM	Bishop Ranch	BR-1501	Lecture
Sat 6/8/2024	9:30 AM - 12:30 PM	Bishop Ranch	BR-1501	Final

INSTRUCTOR: Mehul Rangwala
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OFFICE HOURS: Will be available on the Canvas site.

TEXTBOOK: *Statistics for Management and Economics, 12th edition* by Gerald Keller, Cengage Learning.
12th edition (ebook) ISBN-13: 9780357714409, ISBN-10: 0357714407

NOTES AND HANDOUTS: I will upload the notes, data sets, and in-class exercises on Canvas before every class.

Throughout the quarter I will be posting notes and solved examples on the topics covered in the class.

COMPUTER PACKAGE: Minitab Statistical Software. You can rent Minitab Statistical Software from http://www.onthehub.com/minitab/. Please do not rent Minitab Workspace.
No prior experience with Minitab Statistical Software is required. You will learn it through homework assignments. It is a quite intuitive and easy to use. No programming is needed.

PEDAGOGICAL APPROACH: The class sessions will be interactive with lectures, discussions, and hands-on exercises using Minitab. After I introduce a topic, we will work on cases and exercises related to the concepts covered in each class session to reinforce the theory. A laptop with Excel and Minitab installed is required.

GRADING:		
	Homework (**Group**)	40%
	Midterm (**take-home**)	30%
	Final Exam (**in-class/take-home TBD**)	30%

Course Objectives:

1. Build a foundation for big data and business analytics.

2. Prepare you for other analytics-related courses in the MBA program.

3. Gain an appreciation for the breadth of statistical topics available to solve complex business problems.

4. Learn to identify correct statistical methods appropriate for business problems under consideration. Interpret the results and convey the interpretations in a non-technical manner to your audience.

5. Learn to use statistical software (Minitab) for computations.

6. Be able to critically evaluate reports/articles/research containing statistical information.

Additional Points and Suggestions:

1. The course 403A takes you from fundamental principles through basics of regression analysis. This course (203B) closes the loop by covering ANOVA, regression analysis, time-series analysis, and statistical process control. I will spend some time during the first lecture reviewing some key concepts from the 403A so that we smoothly transition to 203B.

2. While there will be some focus on mathematical formulas, a significant proportion of time will be spent on intuition behind statistical techniques, analyzing when a particular technique should be used, and interpreting/understanding the results from the computer outputs. It is not uncommon for business managers to misapply statistical techniques to research problems. So, it is very important to be able to identify and choose correct methods to solve research problem under study.

3. After the class, re-read the class notes. Summarize what you have learned every week.

4. If you have difficulty with any material, please don't hesitate to contact me. My topmost priority is to ensure that you are successful in understanding of the material.

5. The formats of the midterm and final exams may vary but they will be open-book, open-notes. Please note that the purpose of the exams is to test your understanding of the concepts and not to test your ability to mechanically select menus and options in Minitab and Excel. To this end, the exam may contain a mix of conceptual (multiple-choice) questions and problem applications.

6. Real learning has happened when you can explain the statistical concepts in your own words to people who don't understand statistics.

7. The group homework, midterm, and the final will be cases drawn from various business situations. You will be required to perform quantitative and qualitative analyses for these cases.

Schedule on the next page

Schedule (Tentative)

This is a tentative schedule. Contents and sequence may be adjusted according to the pace of the class.

	Date	Assignments Due	Topics Covered
1	04/06/24		• Review from the core statistics course • Analysis of Variance – Part 1 of 2
2	04/06/24		• Analysis of Variance – Part 2 of 2 • Nonparametric Tests – Part 1 of 2
3	04/20/24	Homework 1 (Group)	Simple Linear Regression and Correlation
4	04/20/24		Multiple Regression
5	05/04/24	Homework 2 (Group)	Regression Model Building – Part 1 of 2
6	05/04/24		Regression Model Building – Part 2 of 2
7	05/18/24	**Midterm Exam** (Take-Home - will be posted after the class on May 4. Complete and submit it in **printed form** anytime on 5/18.)	• Chi-Squared Tests • Nonparametric Tests – Part 2 of 2
8	05/18/24		Time-Series Analysis and Forecasting – Part 1 of 3
9	06/01/24	Homework 3 (Group)	Time-Series Analysis and Forecasting – Part 2 of 3
10	06/01/24		Time-Series Analysis and Forecasting – Part 3 of 3
11	**06/08/24**	Final Exam (In-class or Take-home TBD)	**Final Exam (Comprehensive)**