Data Analysis for Business Applications

MA321 Syllabus Section OLA Fall 2024

Info

3 Credits
Room: None, Since OL course

Instructor Information

calvin_williamson@fitnyc.edu
office: B831 Science and Math
office hours: T 5-6, W 11-12, R 10-12

Description

This course covers intermediate statistics topics with applications to business. Students graph, manipulate, and interpret data using statistical methods and Excel. Topics include data transformations, single and multiple regression, time series, analysis of variance, and chi-square tests. Applications are from the areas of retail, finance, management, and marketing. Prerequisite(s): MA 222

Outcomes

Upon completion of this course, students will be able to:

1. Graphically display data using EXCEL.
2. Mathematical manipulation of data using formulas in EXCEL.
3. Plotting and analyzing time series graphs.
4. Investigating trend, cyclical and seasonal components of time series.
5. Applying smoothing techniques for forecasting with time series.
6. Correlation and graphing regression line.
7. Simple linear regression.
8. Multiple linear regression.
9. Single factor and one-way ANOVA.
10. Two factor and two-way ANOVA.
11. Chi-square tests.

Course Materials

Textbook

Some readings are from an OER textbook that is free. No other textbook is required.

Software

We will be using Google Spreadsheets or other free software for all work in this course. Since these are web-based applications there is NO OTHER SOFTWARE required for the course besides a web browser.

Topics

- Simple Regression
- Multiple Regression
- Time Series
- Seasonality
- Applications of Normal Distributions
- Inventory Models
- Economic Order Quantity
- Newsvendor Problem
- Empirical Probability Distributions

Evaluation

Your grade will come from a set of assignments (one per week) due on Fridays

15 Assignments - one per week (100%)

Assignments (100%) (using Google Spreadsheets)

- For each module you will have to complete some problems using a Google Spreadsheet which you share with me.
- Due dates are every Friday at 11:59 EST PM
- There are no late submissions allowed for any reason. Any work time stamped as occuring after the due dates on each problem cannot be counted for any credit.
- For each assignment I will choose only some parts to grade, but you will not know which parts ahead of time are graded so you need to do all the assignments. Share the document or assignment with me as soon as you start the module. This process will be explained in the first assignment.

AI Policy

You may use any AI tool (ChatGPT, Gemini, Claude, and others) to work on material for this course. However keep in mind the accuracy of these tools for mathematics and statistics is still in question, with some AI better than others. It is beneficial to understand the limitations and be comfortable with working with AI, so you are encouraged to use these tools and evaluate critically how much they assist you. If they keep you from understanding what is really going on, you will have problems on the work in the course. So use with caution.

Course Policies

Modules

This course is organized into 7 modules:

Each module lasts two week.s A module becomes available on the first day it is assigned. (See the course schedule for the dates.) When a module is finished it will remain open so you can refer to it but you will not be able to do further work in that module.

There is no way to make-up any module work once a module is finished, so stay up-to-date with the modules, otherwise you will lose the credit for work in that module.

Module Activities - Overview

For each week you will follow essentially the same activities listed below:

1. Watch a demo video from the instructor talking about the topics and techniques
2. Look at any accompanying documents or references
3. Do the assignment