Data Analysis for Business Applications

Syllabus

MA321-OL1 Summer 2025

Info

3 Credits

Instructor Information

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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 a spreadsheet.
2. Mathematical manipulation of data using formulas in a spreadsheet.
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 (2 per module)

14 Assignments - two per module (100%)

Assignments (100%) (using Google Spreadsheets)

Assignments are listed in a document called "Whats Due When" in each module. This is the definitive document that lists what is due. Please refer each module to that document to see what is due.

For each module you will have to complete some problems using a Google Spreadsheets which you share with me.

- Module 1 Part 1 – DUE Fri 5/30 11:59 EST
- Module 1 Part 2 – DUE Mon 6/2 11:59 EST

- Module 2 Part 1 – DUE Wed 6/4 11:59 EST
- Module 2 Part 2 – DUE Fri 6/6 11:59 EST
- Module 3 Part 1 – DUE Mon 6/9 11:59 EST
- Module 3 Part 2 – DUE Wed 6/11 11:59 EST
- Module 4 Part 1 – DUE Fri 6/13 11:59 EST
- Module 4 Part 2 – DUE Mon 6/16 11:59 EST
- Module 5 Part 1 – DUE Wed 6/18 11:59 EST
- Module 5 Part 2 – DUE Fri 6/20 11:59 EST
- Module 6 Part 1 – DUE Mon 6/23 11:59 EST
- Module 6 Part 2 – DUE Wed 6/25 11:59 EST
- Module 7 Part 1 – DUE Fri 6/27 11:59 EST
- Module 7 Part 2 – DUE Mon 6/30 11:59 EST

There are **NO LATE SUBMISSIONS** counted for any credit in this course. Any work time stamped in google docs as submitted after the due date will not be counted for any credit.

Share the assignment with me as editor via Google Docs sharing as soon as you start the module. There are no assignment drop boxes, we do not use them, so make sure the assignments are shared with me. If they are not shared with me I will grade them as 0s.

Naming Your Assignments

After you choose File> Make A Copy and make copy of each assignment to work on you will need to name it with your First and Last name like follows.

If the assignment is called this:

"Copy of Regression Spreadsheet Assignment"

after you make a copy to work on then you should rename it like this using your first name and last name:

"Lastname Firstname Regression Spreadsheet Assignment"

If you do not name it correctly it will not be graded and I will mark it as 0. Please make sure you adhere to this if you wish to have your assignments counted.

Also make sure to share it with me (as an "Editor") so I can access it and grade itand help you if needed.

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 has 2 parts. 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 part of a module 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