



Math 110.125.88: Introduction to Data Analysis

Course Syllabus

Instructor

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Office Hours: Online, by appointment

Course Description

This online course introduces students to important concepts in data analytics across a wide range of case studies. Students will learn how to gather, analyze, and interpret data to drive strategic and operational success. They will explore how to clean and organize data for analysis, and how to perform calculations using Microsoft Excel. Topics include the data science lifecycle, probability, statistics, hypothesis testing, set theory, graphing, regression, and data ethics.

Course Structure

The course materials are divided into weekly modules which can be accessed in Canvas. A module will have several sections, including the overview, required reading, lectures, online quiz, additional online assignments, and supplemental material. Throughout the course students will apply concepts to their own case study which will be submitted and reviewed by classmates at the end of the semester. Due dates, announcements, and reminders will be posted in Canvas.

Learning Outcomes

At the conclusion of this course, students are expected to have gained the ability to:

- Understand the data science lifecycle.
- Learn and execute Microsoft Excel for data analysis.
- Pose questions, collect, analyze, and interpret data to provide actionable insights.
- Create data-driven visualizations.
- Understand data ethics, privacy, and security.
- Tell compelling stories with data!

Textbook

Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking, by Foster Provost and Tom Fawcett, 1st Edition

Publisher: Wiley (2013), ISBN-13: 978-1449361327
https://catalyst.library.jhu.edu/catalog/bib_7264105

Software

Microsoft Excel is a spreadsheet software program free for JHU (Johns Hopkins University) students.

- Like any language, the best way to learn excel is by using it. You should install excel as soon as possible and start to familiarize yourself with basic operations.
- Additional resource: [Excel video training](#)

Online Lectures

Prerecorded lectures will be posted for the week in each module. There will be live synchronous sessions throughout the semester via zoom, with dates posted in the course. Links to the recordings of each live online session will be posted in Canvas. For more information regarding Zoom, please see the [Zoom Student Quick Start Guide](#).

Discussion Forums

There will be four required discussion forums in the class that highlight data analytic case studies and working with public data sets. To receive full credit for each discussion forum, students must post an original discussion and at least one response to a classmate.

Quizzes

Online quizzes will be assigned each week and will be due by Sunday of that same week. Late quiz submissions will be accepted only with an exceptionally good excuse. Students will have two attempts at each quiz and only the highest grade of those attempts will be counted. The lowest quiz grade will be dropped.

Journal Entries

There are four journal entries throughout the course which contain questions that need to be answered individually and uploaded to the course directly. These assignments will be reflective in nature and are designed to share thoughts and experiences related to the material presented during the week. They will be hand-graded based on correctness, proper argument, and overall presentation.

Excel Practice

There are six Microsoft Excel practice assignments in the course which will help build Excel knowledge and data analytic skills. These assignments will require editing and implementation of excel code on a public data set for each stage of the data analysis process. They will be graded based on proper syntax, correctness, and analysis of the data.

Case Study

The Case Study, similar to a research project, will give students the opportunity to experience the full data analytics lifecycle. By the second week of the course, students will select a data set to explore and

analyze and will apply course concepts weekly to build out a full case study report. These reports will be shared with the class and peer-reviewed in the final week.

Late Work

A late penalty of 10% will be applied each day after the original due date has passed for assignments turned in late. After 7 calendar days of the original due date, late work will not be accepted. Additional points may be deducted for errors. Any exceptions to this will be solely at the instructor's discretion.

Collaboration

Collaboration on assignments is allowed and encouraged. However, each student must write up their own solutions individually and in their own words - copying from another student's paper is prohibited. The online assignments are an essential part of learning the course material. Failing to give them proper attention will significantly harm students' performance and their overall grade for the class.

Grading

The final grade for the class will be given as a weighted average with the weights given as follows:

- Discussion Forums: 10%
- Quizzes: 20% (lowest grade dropped)
- Journal Entries: 15%
- Excel Practice: 20%
- Case Study: 35%

The letter grades are as follows based on your final weighted average:

A: 90-100
B: 80 - 89
C: 70 - 79
D: 55 - 69
F: < 55

Support

There are many sources of help and support if you are having difficulty with the class, material, or anything else. These include:

- Office hours: Online, by appointment
- The Learning Den: <https://academicsupport.jhu.edu/learning-den/>
- Office of Academic Support: <https://academicsupport.jhu.edu>

Please do not feel shy about asking for help, or just checking that you understand something correctly.

Students with Disabilities

Johns Hopkins University values diversity and inclusion. We are committed to providing welcoming, equitable, and accessible educational experiences for all students. Students with disabilities (including

those with psychological conditions, medical conditions, and temporary disabilities) can request accommodation for this course by providing an Accommodation Letter issued by Student Disability Services (SDS). Please request accommodation for this course as early as possible to provide time for effective communication and arrangements.

For further information or to start the process of requesting accommodations, please contact Student Disability Services at Homewood Campus, Shaffer Hall #101, call: 410-516-4720 and email: studentdisabilityservices@jhu.edu or visit the website <https://studentaffairs.jhu.edu/disabilities/>

If you are struggling with anxiety, stress, depression, or other mental health related concerns, please consider visiting the JHU Counseling Center. If you are concerned about a friend, please encourage that person to seek out their services. The Counseling Center is located at 3003 North Charles Street in Suite S-200 and can be reached at 410-516-8278 and online at <http://studentaffairs.jhu.edu/counselingcenter/>

Academic Integrity: Academic Misconduct Policy

All students are required to read, know, and comply with the [Johns Hopkins University Krieger School of Arts and Sciences \(KSAS\) / Whiting School of Engineering \(WSE\) Procedures for Handling Allegations of Misconduct by Full-Time and Part-Time Graduate Students](#).

This policy prohibits academic misconduct, including but not limited to the following: cheating or facilitating cheating; plagiarism; reuse of assignments; unauthorized collaboration; alteration of graded assignments; and unfair competition. You may request a paper copy of this policy at this by contacting jhep@jhu.edu.

JHU (Johns Hopkins University) Ethics Statement

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery, and falsification, lying, facilitating academic dishonesty, and unfair competition.

Report any violations you witness to the instructor. You may consult the associate dean of students and/or the chairperson of the Ethics Board beforehand. Read the "Statement on Ethics" at the [Ethics Board](#) website for more information.