Advanced Data Analysis Syllabus

Contact Info

While going through the program, if you have questions about anything, you can reach us at support@udacity.com. For help from Udacity Mentors and your peers visit the Udacity Classroom.

Nanodegree Program Info

Version: 1.0.0

Length of Program: 89 Days*

** This is a self-paced program and the length is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. Actual hours may vary.*

Part 1: Introduction to the Program

Welcome to Egypt "Future Work is Digital" initiative. Learn more about the program and how to navigate the classroom.

Part 2: Introduction to Data Analysis

Learn the data analysis process of questioning, wrangling, exploring, analyzing, and communicating data. Learn how to work with data in Python using libraries like NumPy and Pandas.

Project: Investigate a Dataset

Choose one of Udacity's curated datasets, perform an investigation, and share your findings.

Supporting Lessons

Lesson	Summary
The Data Analysis Process	Learn about the data analysis process and practice investigating different datasets using Python and its powerful packages for data analysis.
Data Analysis Process - Case Study	Investigate a more challenging dataset on fuel economy and learn more about problems and strategies in data analysis. Continue to build on your Python for data analysis skills.
Programming Workflow for Data Analysis	Additional content to expose you to a different workflow for your analysis in Python: IPython's command line interface, writing scripts in text editors, running scripts in the terminal.

Part 3: Practical Statistics

Learn how to apply inferential statistics and probability to important, real-world scenarios, such as analyzing A/B tests and building supervised learning models.

Project: Analyze A/B Test Results

You will be working to understand the results of an A/B test run by an e-commerce website. Your goal is to work through to help the company understand if they should implement the new page design.

Supporting Lessons

Lesson	Summary
Descriptive Statistics - Part I	In this lesson, you will learn about data types, measures of center, and the basics of statistical notation.
Descriptive Statistics - Part II	In this lesson, you will learn about measures of spread, shape, and outliers as associated with quantitative data. You will also get a first look at inferential statistics.
Admissions Case Study	Learn to ask the right questions, as you learn about Simpson's Paradox.
Probability	Gain the basics of probability using coins and die.
Binomial Distribution	Learn about one of the most popular distributions in probability - the Binomial Distribution.
Conditional Probability	Not all events are independent. Learn the probability rules for dependent events.
Bayes Rule	Learn one of the most popular rules in all of statistics - Bayes rule.
Python Probability Practice	Take what you have learned in the last lessons and put it to practice in Python.
Normal Distribution Theory	Learn the mathematics behind moving from a coin flip to a normal distribution.
Sampling distributions and the Central Limit Theorem	Learn all about the underpinning of confidence intervals and hypothesis testing - sampling distributions.
Confidence Intervals	Learn how to use sampling distributions and bootstrapping to create a confidence interval for any parameter of interest.
Hypothesis Testing	Learn the necessary skills to create and analyze the results in hypothesis testing.
Case Study: A/B tests	Work through a case study of how A/B testing works for an online education company called Audacity.
Regression	Use python to fit linear regression models, as well as understand how to interpret the results of linear models.
Multiple Linear Regression	Learn to apply multiple linear regression models in python. Learn to interpret the results and understand if your model fits well.
Logistic Regression	Learn to apply logistic regression models in python. Learn to interpret the results and understand if your model fits well.

Part 4: Data Visualization

Learn to apply sound design and data visualization principles to the data analysis process. Learn how to use analysis and visualizations to tell a story with data.

Project: Communicate Data Findings

Choose a dataset, either your own or a Udacity-curated dataset, and perform an exploratory data analysis using Python. Then, create a presentation with explanatory plots that conveys your findings.

Supporting Lessons

Lesson	Summary
Data Visualization in Data Analysis	In this lesson, see the motivations for why data visualization is an important part of the data analysis process and where it fits in.
Design of Visualizations	Learn about elements of visualization design, especially to avoid those elements that can cause a visualization to fail.
Univariate Exploration of Data	In this lesson, you will see how you can use matplotlib and seaborn to produce informative visualizations of single variables.
Bivariate Exploration of Data	In this lesson, build up from your understanding of individual variables and learn how to use matplotlib and seaborn to look at relationships between two variables.
Multivariate Exploration of Data	In this lesson, see how you can use matplotlib and seaborn to visualize relationships and interactions between three or more variables.
Explanatory Visualizations	Previous lessons covered how you could use visualizations to learn about your data. In this lesson, see how to polish up those plots to convey your findings to others!
Visualization Case Study	Put to practice the concepts you've learned about exploratory and explanatory data visualization in this case study on factors that impact diamond prices.

Part 5: Digital Freelancing - Intro

Get introduced to the world of digital freelancing.

Part 6: Digital Freelancing - Pro

Get started with digital freelancing and submit your first proposal.

Project: Conquer the freelancing marketplaces

Supporting Lessons

Lesson	Summary
مخطط البرنامج	
المنصات التخصصية	ستتعرف على أهمية مواقع المنصات التخصصية مثل Github, Behace, Dribbble, Stack Overflow, Kaggle للاستفادة من تجارب الآخرين وايضا للترويج لعملك كفري لانسر في المكان المناسب.
إنشاء مدونة	
إدارة العملاء	
عرض العمل (proposal)	
مهارات التواصل	
التسويق	
إدارة المشاريع	
الإدارة الذاتية	
تطوير المهارات	
الإنضمام للوكالات	

Part 7: Congratulations and Next Steps

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