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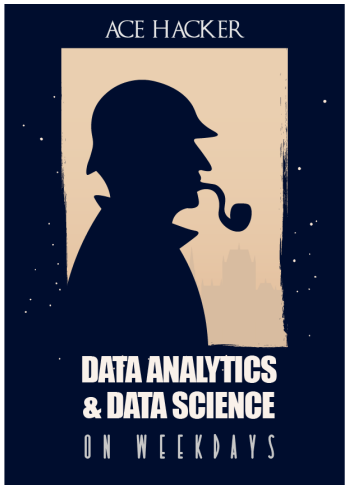

DATA ANALYTICS & DATA SCIENCE

An introductory course on the principles of **Data Analytics, Data Science** and the **Python** programming language, viewed through the lens of the world's greatest consulting detective - Sherlock Holmes. Learn to observe, deduce, and present findings, transforming raw clues (data) into compelling solutions.

In **Sherlock & I**, you'll uncover the fundamentals of data wrangling, visualizations, statistics, and storytelling—all expressed in the language of Python. Each lesson is wrapped in a Holmesian mystery, where every dataset holds a secret, and every Python script brings you one clue closer to the truth. It's not just a course - it's an adventure in logic, deduction, and data-driven discovery.

Hybrid Classes - available onsite and online.

Code with us from the classroom or your home. Our hybrid classes let you join the fun from anywhere on Earth (or beyond, if your Wi-Fi's good enough).

Learn Data Analytics in 8 weeks.

Sherlock & I is a 8-week immersive investigation into the world of data, deduction, and dazzling Python skills. In just a month and a half, you'll go from curious coder to consulting data detective-cracking digital mysteries week by week.

Each session builds on the last like chapters in a gripping Holmes novel, and by the final page, you'll be solving capstone cases worthy of Scotland Yard. Eight weeks, one unforgettable adventure!

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Ch.	Description
01	**The Foundation of Deduction** Case file: **A Scandal in Bohemia** "It is a capital mistake to theorize before one has data." We begin by understanding why we must first gather facts before drawing conclusions. Every investigation begins with the basics. • What is Data Analytics? The process of inspecting, cleaning, transforming, and modeling data. • The Data Analyst's Mindset: Observation vs. Deduction. • Introduction to the Python toolkit: Setting up your environment (Jupyter Notebook/Google Colab). • Basic Python Syntax: Variables, data types (strings, integers, floats), and comments. • Lab: "Tea with Holmes" - Load a CSV dataset about Holmes' daily case notes. Use basic Python and pandas to explore the data, understand columns, view summary stats, and print your first data insights.
02	**Examining the Evidence** Case file: **The Adventure of the Blue Carbuncle** From a battered hat, Holmes deduces the owner's age, intellect, and lifestyle. We learn to extract initial insights from a dataset. • Exploratory Data Analysis (EDA) • The goal of EDA: Summarizing the main characteristics of a dataset • Understanding dataset dimensions, data types, and initial statistics • Pandas Library: Introduction to DataFrames • Loading data: `pd.read_csv()` • First look at data: `.head()`, `.tail()`, `.info()`, `.describe()`, `.shape`
03	**Frequency analysis and visualising data distributions** Case file: **The Adventure of the Dancing Men** Holmes uses frequency analysis to decode a secret cipher based on letter usage in English. This module teaches students how frequency counts and bar plots can help uncover hidden patterns in datasets. • Understanding frequency distributions • Analyzing categorical data to find patterns • `pandas.value_counts()` • `matplotlib.pyplot.bar()` • `collections.Counter` • Lab: "The Dancing Code" - Given an encrypted message of dancing symbols (mapped to letters), perform frequency analysis to guess letters and decode the message. Use Counter and bar plots to visualize symbol frequencies.

04	**Handling missing data and drawing insights from absence**
	
	Case file: **The Adventure of Silver Blaze**
	The most important clue was what "didn't" happen. The absence of a bark was an anomaly that pointed to the culprit. Here, we learn to use statistical methods to detect outliers, and learn to interpret missing or null data - the silent clues that often solve the case.
	
	What is an outlier or an anomaly?
	Using statistics to identify data points that deviate from the norm
	boolean Filtering
	`isnull()`
	`dropna()`
	`fillna()`
	Lab: "The dog didn't bark" - Analyze a dataset of guard dog reports and stable logs. Identify missing values (e.g., missing logs for the dog), interpret their significance, and clean the data accordingly.

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05	**Natural Language Processing and Sentiment Analysis** Case file: **The Hound of the Baskervilles** Fear and myth obscure the truth in this story. Learn how to analyze text sentiment and extract facts from fiction using NLP - just like Holmes separates superstition from logic. • `nltk` • `TextBlob` • `Counter` • Word clouds • Basic sentiment scoring • Lab: "Tales from the Moor" - Given text-based eyewitness accounts, perform sentiment analysis using TextBlob. Classify statements as factual or emotional, and visualize word clouds to identify recurring themes.
06	**Working with image data and metadata** Case file: **A Scandal in Bohemia** Holmes discovers the hidden photograph by interpreting visual clues and subtle cues. This module teaches students how to load, inspect, and even analyze image files using metadata. • `Pillow` • `matplotlib.pyplot.imshow()` • `os` • Image properties • Lab: "The Photo Clue" - Work with a set of image files (metadata only). Extract resolution, file size, creation date, etc. Use Python to identify the original image based on clues from Holmes' notes.
07	**Anomaly detection and outlier analysis** Case file: **The Adventure of the Speckled Band** Holmes spots an unusual pattern (a vent, a rope, and a whistle). Students learn to identify outliers in data that don't follow the expected pattern. • `describe()` • box plots • z-score • IQR method • Lab: "The Unusual Room" - Analyze a home layout dataset with sensor data from rooms. Use box plots and z-scores to detect anomalies (like strange movements in the middle of the night).
08	**Graph theory, coordinates, and pathfinding algorithms** Case file: **The Adventure of the Musgrave Ritual** Holmes solves an ancient riddle involving distances and directions. Students solve treasure hunt puzzles using graphs and coordinate-based analysis. • `networkx` • Pathfinding (e.g., Dijkstra's algorithm) • Adjacency lists • Lab: "The Algorithmic Treasure Hunt" - Use coordinate data and directional clues from a riddle to simulate a treasure hunt. Construct a simple graph and find the shortest path to the treasure.

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09	**Filtering and facing data lineage** Case file: **The Adventure of the Blue Carbuncle** Holmes backtracks a stolen gem's journey through layers of ownership. Similarly, students learn to filter and trace records through chains of conditions. Also, from a battered hat, Holmes deduces the owner's age, intellect, and lifestyle. We learn to extract initial insights from a dataset. • `pandas` filters • `.loc[]` • `.query()` • Condition chaining • Lab: "The Goose Trail" - Trace a valuable object through multiple owners using a transaction log dataset. Use filtering, sorting, and conditional logic to reconstruct the timeline and catch the thief.
10	**Introduction to encryption and data encoding/decoding** Case file: **The Adventure of the Bruce-Partington Plans** Stolen documents are hidden using secret codes. Students learn simple encryption techniques and frequency-based decryption. • Caesar cipher in Python • Basic modular arithmetic • String manipulation • Lab: "Secrets of the Cipher" - Implement Caesar and simple substitution ciphers. Given an encoded message in a dataset, apply decryption using frequency-based analysis and string operations.
11	**Predicting modeling and regression** Case file: **The Five Orange Pips** Holmes predicts a murder sequence using the pattern of orange pips. Students learn to train linear regression models to make data-driven predictions. • `scikit-learn` • Linear Regression • `train_test_split` • `mean_squared_error` • Lab: "Letters of Doom" - Use a dataset of past victims who received orange pips. Train a linear regression model to predict time of attack based on number of days after receiving the pips.
12	**Classification and decision making** Case file: **The Adventure of the Stockbroker's Clerk** A seemingly good job offer turns into a trap. Students learn how to classify outcomes - good vs bad, spam vs. not spam-based on data features. • K-Nearest Neighbors (KNN) • Decision Trees • Confusion Matrix • Accuracy Scoring • Lab: "Offer too good to be true" - Use classification (KNN/Decision Tree) to detect fraudulent job offers from real ones based on features like salary, work hours, recruiter source, etc.

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13	**Time-series analysis** Case file: **The Final Problem** Holmes disappears, and clues are revealed over time. Students explore trends and changes in data across time intervals. • `pandas.to_datetime()` • Indexing by time • Rolling averages • `matplotlib` Line plots • Lab: "The fall and the timeline" - Analyze a dataset of Holmes and Moriarty sightings leading up to the fall. Use time-series plots to detect movement patterns and predict confrontation time.
14	**Correlation and multivariate analysis** Case file: **Multiple cases (Holmes often discovers hidden relationships)** Holmes sees connections others miss. This module shows how variables interact and how to measure those relationships. • `corr()` • Scatter plots • Heatmaps • `seaborn` • Lab: "Connections only Holmes could see" - Use a multivariate dataset (e.g., crime data across cities). Calculate correlations, draw scatter plots, and generate heatmaps to find relationships.
15	**Data cleaning and preprocessing** Case file: **Several stories where missing information is the key clue** Just as Holmes pieces together a puzzle with missing parts, students learn to clean, impute, and prepare incomplete datasets. • Imputation strategies • String cleaning • `dropna()` • Regex • Lab: "The case of the disappearing values" - lean a messy dataset with random missing values. Apply imputation techniques (mean, median, or custom logic) and prepare the data for modeling.
16	**Web scraping and live data extraction** Case file: **Modern interpretation inspired by Holmes' investigation style** Holmes gathers hidden data from different sources; students learn to extract structured data from websites to build their own datasets. • `BeautifulSoup` • requests • HTML parsing • `pandas.DataFrame()` from scraped tables • Lab: "Holmes goes online" - Scrape a fictional criminal report archive (mock HTML or real site like IMDb crime stories). Extract key data points and convert them into a usable dataset.

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17	**Data Cleaning and Wrangling** Case file: **The Man with the Twisted Lip** A respectable gentleman is disguised as a beggar. Holmes cleans away the grime to reveal the truth. We learn to clean "dirty" data. • Identifying and handling missing values (nulls) • Correcting incorrect data types • Filtering and selecting relevant data • `.isnull().sum()` • `.fillna()` • `.dropna()`
18	**Full analytics project lifecycle** Case file: **The Final Problem** This is the learner's showdown with "Professor Moriarty" - a complex dataset filled with clues and red herrings. Students apply all techniques learned to solve the mystery and present findings. • Data import • EDA • Cleaning • Modeling • Visualization • Storytelling • Capstone Lab: "The Moriarty Dataset" - You receive a massive dataset of Moriarty's criminal network. Your mission: clean the data, explore patterns, detect key collaborators, visualize findings, and present a final report (or Jupyter Notebook dashboard) to Scotland Yard.

Need more information?

Contact us.

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