COURSE SYLLABUS

Data Analytics & AI Certificate Program (Self-Paced)

Collect, analyze, visualize, and interpret data using Python, SQL, and Tableau, and develop AI-powered solutions with Flask and the OpenAI API. Graduate ready for work as a data analyst, business intelligence analyst, or AI application developer across technology, business, healthcare, finance, and government.

Group classes (Live Online) and onsite training are available for this course. For more information, email corporate@nobledesktop.com or visit: https://www.nobledesktop.com/certificates/data-analytics-ai-certificate



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Course Outline

This package includes these courses

- Excel for Data Analytics Course Online (Self-Paced) (18 Hours)
- Data Analytics Foundations Course Online (Self-Paced) (12 Hours)
- Tableau Course Online (Self-Paced) (12 Hours)
- SQL Course Online (Self-Paced) (18 Hours)
- Python for Data Science Course Online (Self-Paced) (30 Hours)
- Python Machine Learning Course Online (Self-Paced) (30 Hours)
- Python Data Visualization & Interactive Dashboards Online (Self-Paced) (24 Hours)
- Python for Automation Course Online (Self-Paced) (6 Hours)
- Python Machine Learning Advanced (Self-Paced) (30 Hours)
- Python for AI Course Online (Self-Paced) (30 Hours)
- Data Science Capstone Projects (0 hours)

Attend the AI for Data Analytics course for free with this program. Contact us after registering to be added.

AI for Data Analytics (Self-Paced)

Excel for Data Analytics Course Online (Self-Paced)

Master Excel's most powerful features to streamline data analysis, improve reporting accuracy, and extract meaningful insights from large datasets in this hands-on training.

- Learn Excel functions and formulas for organizing, calculating, and summarizing data efficiently
- Create and customize visual charts, including line, column, and pie charts to present data clearly
- Use logical statements, database functions, and data validation to manage and filter large datasets

- Build and manipulate Pivot Tables to quickly summarize, sort, and group information
- Explore advanced tools like named ranges, date calculations, and macro recording for custom reporting
- Apply auditing techniques, cell locking, and Excel hot keys to optimize your spreadsheet workflow

Data Analytics Foundations Course Online (Self-Paced)

Build a strong analytical foundation through hands-on training in statistical concepts, forecasting techniques, and data modeling methods used across industries for smarter decision-making.

- Understand core statistical concepts including measures of central tendency, data dispersion, and the normal curve
- Explore descriptive and inferential statistics, including probability distributions like binomial and Poisson
- Learn to analyze and forecast data using correlation, linear regression, and multiple regression techniques
- Apply predictive analytics with tools like trendlines, moving averages, and scenario modeling
- Create clear data visualizations using charts, histograms, icon sets, color scales, sparklines, and pivot tables
- Discover prescriptive analytics techniques such as Solver and linear programming to optimize decision-making

Tableau Course Online (Self-Paced)

Develop the skills to turn raw data into compelling visual stories with Tableau, the industry-leading data visualization platform. This hands-on bootcamp teaches you to explore, analyze, and publish dashboards that communicate insights clearly and effectively.

- Connect to datasets in various formats, then clean, filter, and structure data for effective visual storytelling
- Create a range of visualizations including bar charts, line charts, treemaps, heat maps, dual-axis charts, and advanced types like spider maps and alluvial diagrams
- Use Tableau's calculation tools to create custom fields, apply aggregates, and deepen your data analysis
- Format charts with labels, tooltips, color, and axis adjustments, and build interactive map visualizations such as choropleths and proportional symbol maps
- Customize dashboards and stories for various audiences and screen sizes using Tableau's interactivity tools
- Publish work to Tableau Cloud and export dashboards for professional sharing and collaboration

SQL Course Online (Self-Paced)

Learn how to extract, filter, and manipulate data using SQL. This course covers PostgreSQL fundamentals, database querying, table joins, and advanced techniques for handling large datasets.

- Write SQL queries to retrieve, filter, and sort data efficiently
- Use joins to combine information from multiple tables and establish relationships
- Apply aggregate functions like SUM, COUNT, AVG, and GROUP BY to summarize data
- Work with subqueries, conditional logic (CASE statements), and advanced string functions
- Optimize queries using indexes, data type conversions, and best practices
- Explore views and user-defined functions to streamline database management

Python for Data Science Course Online (Self-Paced)

Unlock the power of Python for data-driven decision-making as you master Python programming fundamentals and dive into data analysis. Acquire essential skills to clean and manipulate data, create insightful visualizations, and perform statistical

analysis, all through hands-on projects with real-world datasets.

- Handle different types of data such as integers, floats, and strings
- Control the flow of your programs with conditional statements, loops, and functions
- Reuse and simplify code with object-oriented programming
- Analyze tabular data with NumPy and pandas
- Create graphs and visualizations with Matplotlib
- Make predictions with linear regression, using scikit-learn

Python Machine Learning Course Online (Self-Paced)

Learn the fundamentals of machine learning, including regression analysis and classification algorithms, in this practical, hands-on course. Gain the skills needed to solve real-world problems using machine learning, with a focus on Python programming and data science libraries.

- How to clean and balance your data using the pandas library
- Applying machine learning algorithms such as logistic regression and random forest using the scikit-learn library
- Choosing good features to use as input for your algorithms
- Properly splitting data into training, test and cross-validation sets
- Important theoretical concepts like overfitting, variance and bias
- Evaluating the performance of your machine learning models

Python Data Visualization & Interactive Dashboards Online (Self-Paced)

Learn to gather, manipulate, and analyze real-life data in this course, where you'll gain hands-on experience with Python's NumPy and pandas libraries. Develop your data visualization skills using Matplotlib, Seaborn, Plotly, and Dash Enterprise, and complete real-life projects that can be deployed online.

- Plan, gather, and manipulate data from different sources to present a data story
- Find data stories through exploratory data analysis
- Manipulate data with NumPy and pandas.
- Use advanced Python visualization libraries Plotly and Dash
- Build a dashboard and apply the rules of effective dashboard design to create professional data science solutions
- Go live with your project and deploy the dashboard on a live server

Python for Automation Course Online (Self-Paced)

Learn how to use Python to extract data from websites and write loops for processing large numbers of pages. This course covers HTML and CSS, Python fundamentals, web scraping techniques, data storage, and scheduling.

- Learn Python syntax and how to construct programs and scripts
- Write scripts that automate manual tasks and update Excel files automatically
- Identify and correct common errors in your code
- Schedule your programs to run automatically on a regular basis
- Apply web scraping techniques through real-life exercises and examples

Python Machine Learning Advanced (Self-Paced)

Gain hands-on experience with advanced machine learning techniques as you build and deploy real-world projects across natural language processing, recommendation systems, forecasting, deep learning, and computer vision.

- Build and deploy full-stack applications with Flask
- Implement collaborative and content-based recommendation engines
- Forecast trends using advanced time series modeling with Facebook Prophet
- Train and evaluate convolutional neural networks using PyTorch
- Perform real-time object detection in images and video streams with YOLO
- Apply NLP techniques to build effective sentiment analysis models

Python for AI Course Online (Self-Paced)

Learn how to build AI-powered web applications using Flask and the OpenAI API. This course covers web development fundamentals, API integration, and AI-driven features for interactive applications.

- Set up Flask projects and create routes for handling web requests and rendering templates
- Design and style web applications using HTML, CSS, and Flask's templating system
- Integrate the OpenAI API to implement AI-powered features like sentiment analysis
- Handle user input with dynamic forms and process data for real-time interactions
- Implement error handling and debugging techniques to ensure smooth application performance
- Deploy and test Flask applications for real-world use and AI-enhanced functionality

Data Science Capstone Projects

Throughout this program, you will complete three capstone projects to showcase in your portfolio:

Machine Learning & AI Capstone

- Choose, clean, and engineer features from a structured dataset to train machine learning models (e.g., logistic regression, random forest), evaluate performance, and visualize results clearly.
- Deliver a professional presentation detailing your data processing workflow, modeling techniques, and insights discovered using Python libraries like pandas, scikit-learn, and Matplotlib.

Python for AI Capstone *(Choose One of Two)*

- AI Chat Assistant: Build an interactive chat assistant embedded on a webpage, using Flask and JavaScript to integrate with OpenAI's API for context-aware user interactions.
- Collectibles Identification App: Develop a Flask-based web app allowing image uploads of collectible items, leveraging OpenAI to identify items, generate descriptive metadata, and dynamically display logged session history.

Python Data Visualization Capstone

- Clean, analyze, and visualize global CO_2 emissions alongside GDP and population data, highlighting trends and correlations through insightful visualizations with Matplotlib, seaborn, and plotly.
- Build a responsive Dash dashboard enabling interactive exploration of emissions data, clearly communicating insights such as regional trends, GDP-emission correlations, and emission anomalies.

You will work on your capstone projects both in and outside of class, using scheduled mentoring sessions to review your progress, ask questions, and get personalized feedback from your instructor.

See examples of data science capstone projects from students.