COURSE SYLLABUS

Data Analytics & AI Certificate

Gain practical skills in analyzing datasets, building predictive models, and creating AI-powered applications using Python and industry-leading tools.

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



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Course Outline

This package includes these courses

- Excel for Data Analytics (18 Hours)
- Data Analytics Foundations (12 Hours)
- Tableau Bootcamp (12 Hours)
- PostgreSQL Bootcamp (18 Hours)
- Python for Data Science Bootcamp (30 Hours)
- Python Machine Learning Bootcamp (30 Hours)
- Python Data Visualization & Interactive Dashboards (30 Hours)
- Python for Automation (6 Hours)
- Python Machine Learning Advanced (30 Hours)
- Python for AI: Create AI Apps with Flask & OpenAI (30 Hours)
- Data Science Capstone Projects (Self-Paced) (0 hours)

Excel for Data Analytics

- Learn fundamental database and statistical functions
- Use PivotTables and lookup functions (including VLOOKUP)
- Create simple macros to speed up your workflow

Data Analytics Foundations

- Fundamentals of data analytics and statistics
- How to use data for forecasting & decision-making
- How businesses use data analytics in their processes

Tableau Bootcamp

PostgreSQL Bootcamp

- Explore information stored in a database (tables, columns, rows, etc.) using the graphical interface of DBeaver (a popular free database app)
- Write SQL queries to retrieve data from tables in a database
- Combine information from multiple tables with JOIN statements
- Filter data, group it, and sort it to extract the specific info you need
- Advanced techniques like Subqueries, String Functions, and IF-Else logic with CASE
- How to use Views and Functions with parameters instead of directly querying tables

Python for Data Science Bootcamp

- 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 Bootcamp

- 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

Transform raw data into interactive visual insights by building dashboards with Python's top visualization tools. This course blends analysis, design, and deployment to help you showcase data professionally.

- Work with real-life datasets using Python's core libraries, including NumPy for numerical computing and pandas for data manipulation
- Create static and interactive visualizations using Matplotlib, Seaborn, and Plotly to clearly communicate trends and patterns
- Build multi-component dashboards using Dash Enterprise, incorporating callbacks, sliders, date pickers, and more
- Practice hands-on development by applying new skills to personalized projects with guided instructor support
- Publish your dashboards online using GitHub and Heroku to demonstrate your work to potential employers or clients
- Explore best practices for styling and structuring visual narratives that are clear, persuasive, and engaging

Python for Automation

- Learn the syntax of Python and how to construct programs
- Learn how to run your programs on a regular schedule
- How to handle errors

Python Machine Learning Advanced

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: Create AI Apps with Flask & OpenAI

- Learn how AI and Python go hand-in-hand
- Work with Python's major AI libraries
- Build & deploy your own AI app

Data Science Capstone Projects (Self-Paced)

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.