COURSE SYLLABUS

Data Analytics & AI Certificate Online

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 partnerships@vdci.edu or visit: https://vdci.edu/certificates/data-analytics-ai-certificate



admissions@vdci.edu • (619) 758-9300

Course Outline

This package includes these courses

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

Attend the Data Science Capstone Project and the AI for Data Analytics course for free as part of this certificate.

- Data Science Capstone Project
- AI for Data Analytics Course Online

Excel for Data Analytics Course Online

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

Gain hands-on experience in statistical concepts, forecasting techniques, and data modeling methods that are widely used across industries to drive smarter decision-making.

- Understand core statistical concepts such as 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 such as trendlines, moving averages, and scenario modeling
- Create clear data visualizations with charts, histograms, icon sets, color scales, sparklines, and pivot tables
- Discover prescriptive analytics techniques like Solver and linear programming to optimize decision-making

Tableau Course Online

Acquire the skills to transform raw data into impactful visual stories with Tableau, the industry-leading data visualization platform. This self-paced course will guide you in exploring, analyzing, and publishing dashboards that effectively communicate insights.

- Connect to datasets in multiple formats, then clean, filter, and structure the data for effective visual storytelling
- Create various visualizations such as bar charts, line charts, treemaps, heat maps, and dual-axis charts
- Leverage Tableau's calculation tools to build custom fields, apply aggregates, and enhance your data analysis
- Format charts with labels, tooltips, colors, and axes for improved clarity and visual appeal
- Work with geographic data to create interactive map visualizations, including choropleths and proportional symbol maps
- Customize dashboards and stories for different audiences and devices using Tableau's interactive features
- Integrate external map services and explore advanced visualization types like spider maps and alluvial diagrams
- Publish your projects to Tableau Cloud and export dashboards for professional sharing and collaboration

SQL Course Online

Learn how to efficiently extract, filter, and manipulate data using SQL with a focus on PostgreSQL fundamentals. This course covers database querying, table joins, and advanced techniques for managing large datasets.

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

Python for Data Science Course Online

Learn how to use Python as a practical tool for data-driven decision making by building a strong foundation in programming and data analysis. Through hands-on projects with real-world data, you'll practice cleaning and organizing datasets, creating clear visualizations, and applying statistical techniques to uncover meaningful insights.

- Work with various data types, including integers, floats, and strings
- Control program execution using conditional statements, loops, and functions
- Simplify and reuse code with object-oriented programming

- Analyze structured data using NumPy and pandas
- Design graphs and visualizations with Matplotlib
- Build predictive models using linear regression with scikit-learn

Python Machine Learning Course Online

Master the basics of machine learning, including regression analysis and classification algorithms, in this hands-on course. Develop the skills required to tackle real-world challenges using machine learning, with an emphasis on Python programming and key data science libraries.

- Clean and balance data using the pandas library
- Implement machine learning algorithms like logistic regression and random forest with scikit-learn
- Select relevant features to input into your algorithms
- Correctly split data into training, test, and cross-validation sets
- Understand key theoretical concepts such as overfitting, variance, and bias
- Assess the performance of your machine learning models

Python Data Visualization & Interactive Dashboards Course Online

Learn how to collect, manipulate, and analyze real-world data in this course, gaining hands-on experience with Python's NumPy and pandas libraries. Enhance your data visualization skills with tools like Matplotlib, Seaborn, Plotly, and Dash Enterprise, and work on real-life projects that you can deploy online.

- Plan and present a compelling data narrative
- Collect and manipulate data from various sources
- Discover insights through exploratory data analysis
- Manipulate data using NumPy and pandas
- Utilize advanced Python visualization libraries like Plotly and Dash
- Create interactive dashboards
- Apply best practices in dashboard design for professional data science solutions
- Deploy your project and dashboard live on a server

Python for Automation Course Online

Learn how to use Python to extract data from websites and write loops to process multiple pages. This course covers essential topics like HTML/CSS, Python fundamentals, web scraping techniques, data storage, scheduling, and includes real-world examples of scraping valuable data.

- Understand how websites are structured using HTML and CSS to locate and extract specific data
- Build a foundation in Python fundamentals, including variables, data types, conditionals, loops, and working with lists
- Use the Requests and Beautiful Soup libraries to scrape web content and target relevant information
- Write loops to automate data collection across multiple web pages and reduce repetitive manual work
- Save scraped data in common formats such as text files and CSVs for analysis and reporting
- Schedule Python scripts to run automatically, supporting ongoing data collection and automated workflows

Python Machine Learning Advanced Course Online

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

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

- Set up Flask projects and create routes to handle web requests and render templates
- Design and style web applications using HTML, CSS, and Flask's templating system
- Integrate the OpenAI API to add 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 for smooth app performance
- Deploy and test Flask applications for real-world use and AI-enhanced functionality