



Data Analytics Bootcamp

Course ID #: 7000-843-ZZ-Z

Hours: 146

Course Content

Course Description:

In these courses, you will cover how to leverage tools beyond Excel. You'll not only understand the relevant tools but how to effectively use data and communicate with it to provide relevant insights and drive data-driven decisions with your organization.

12-Week Camp:

- Weeks 1-2, Data Access – Programming 8/13/24 – 8/22/24
- Weeks 3-4, Introduction to Programming 8/27/24 – 9/5/24
- Weeks 5-6, Data Stewardship and Quality 9/10/24 – 9/19/24
- Weeks 7-8, Introduction to Python 9/24/24 – 10/3/24
- Weeks 9-11, Business Process Analysis 10/8/24 – 10/24/24
- Week 12, AI Foundations 10/29/24 – 11/5/24

Course Objectives:

Upon successful completion of these courses, students will be able to:

- Understand data management and key attributes for exploratory data analysis
- Transform data quality by implementing processes, measurements, and monitoring
- Utilize framework to transform data into insights
- Gather requirements and ask the right questions
- Adopt a product mindset around analytics
- Scope data sets and solutions for improvement of business acumen

Prerequisites:

None.



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Weeks 1-2: Data Access - Programming

Lesson 1: CompTIA Cloud Essentials

- Introduction to Cloud Computing
- Business Value of Cloud Computing
- Technical Perspectives of Cloud Computing
- Technical Challenges of Cloud Computing
- Steps to Successful Adoption of Cloud Services
- ITIL and Cloud Computing
- Identifying Risks and Consequences

Lesson 2: SQL Level 1

- Executing a Simple Query
- Performing a Conditional Search
- Working with Functions
- Organizing Data
- Retrieving Data from Multiple Tables
- Presenting Query Results

Lesson 3: SQL Level 2

- Advanced Querying Using Subqueries
- Manipulating Table Data
- Manipulating the Table Structure
- Working with Views
- Indexing Data

Weeks 3-4: Introduction to Programming

Lesson 1: Overview of Programming

- Programs and Languages
- The Programming Process

Lesson 2: Object-Oriented Programming

- Overview of Object-Oriented Technology
- Event-Driven Programming

Lesson 3: Calculations

- Literals, Operators, and Functions

Lesson 4: Storing Values

- Variables and Data Types

Lesson 5: Making Decisions

- Branching

Lesson 6: Looping

- Exploring Loops in Visual Basic

Lesson 7: Making Programs Modular

- Units of Code
- Scope
- Repeating Character Commands
- Adjusting Fonts and Font Sizes
- Spacing Characters



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Weeks 5-6: Data Stewardship and Quality

Lesson 1: Introduction to Data Engineering and Data Quality

- Understanding data engineering and its importance
- Overview of data quality and its impact on data engineering
- Introduction to data engineering pipelines

Lesson 2: Data Ingestion and Transformation

- Methods for ingesting and transforming data (in tools like snowflake, Kafka, etc.)
- Techniques for cleaning and preparing data (using techniques in SQL, Python, etc.)
- Managing data pipelines and workflow orchestration

Lesson 3: Data Quality Assessment and Improvement

- Techniques for assessing data quality
- Methods for improving data quality (in mesh framework and self-service tools like dataiku)
- Establishing data quality metrics (in common data catalogs)

Lesson 4: Data Stewardship and Governance

- Overview of data stewardship and governance
- Defining roles and responsibilities for data stewardship
- Establishing data governance policies and procedures

Lesson 5: Integrating Data Quality and Stewardship into Business Processes

- Integrating data quality and stewardship into business processes
- Implementing data quality and stewardship in data management systems
- Addressing data quality and stewardship in project management

Lesson 6: Managing Change and Measuring Success

- Overcoming resistance to change in data quality and stewardship initiatives
- Establishing a framework for measuring the success of data quality and stewardship initiatives
- Continuous improvement for data quality and stewardship processes



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Weeks 7-8: Introduction to Python for Analytics

Lesson 1: About this Course

- Welcome
- Classroom etiquette
- Course outline
- Student files
- Extracting the student files
- Examples
- Lab exercises
- Appendices

Lesson 2: An Overview of Python

- What is Python?
- The Birth of Python
- Python Timeline
- About Interpreted Languages
- Advantages of Python
- Disadvantages of Python
- How to Get Python
- How to Get Python?
- The end of 2.x
- Getting Help
- Pydoc
- Using Pydoc

Lesson 3: The Python Environment

- Starting Python
- If the Interpreter is Not in Your PATHs
- Using the Interpreter
- Trying Out a Few Commands
- The help() Command
- Running a Python Script\
- Python Scripts on Unix
- Python Scripts on Windows
- Python Editors and IDEs

Lesson 4: Getting Started

- Using Variables
- Keywords
- Built-in Functions
- Variable Typing
- Strings
- Single-delimited String Literals
- Triple-delimited String Literals
- Raw String Literals
- Unicode Characters
- String Operators and Methods
- Numeric Literals
- Math Operators and Expressions
- Converting Among Types
- Writing to the Screen
- String Formatting
- Command Line Parameters
- Reading From the Keyboard

Lesson 5: Flow Control

- About Flow Control
- What's with the White Space
- If and Elif
- Conditional Expressions
- Relational Operators
- Boolean Operators
- While Loops
- Alternate Ways to Exit a Loop

Lesson 6: Sequences

- About Sequences
- Lists
- Tuples
- Indexing and Slicing
- Iterating Through a Sequence
- Using Enumerate()
- Functions for All Sequences
- Keywords and Operators for All Sequences
- The Range() Function
- Nested Sequences
- List Comprehensions
- Generator Expressions



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Lesson 7: Working with files

- Text File I/O
- Opening a Text File
- The With Block
- Reading a Text File
- Writing to a Text File
- Non-Delimited (Raw) Data

Lesson 8: Dictionaries and Sets

- About Dictionaries
- When to Use Dictionaries
- Creating Dictionaries
- Getting Dictionary Values
- Iterating Through a Dictionary
- Reading File Data into a Dictionary
- Counting with a Dictionary
- About Sets
- Creating Sets
- Working with Sets

Lesson 9: Functions

- Defining a Function
- Function Parameters
- Returning Values
- Variable Scope

Lesson 10: Sorting

- Sorting
- The Sorted() Function
- Alternate Keys
- Lambda Functions
- Sorting Nested Data
- Sorting Dictionaries
- Sorting in Reverse
- Sorting Lists in Place

Lesson 11: Using Modules

- Regular Expressions
- RE Syntax Overview
- RE Objects
- Searching for Patterns
- Matching Without Re Objects
- Compilation Fags
- Grouping
- Special Groups
- Replacing Text
- Splitting a String

Lesson 12: Using the Standard Library

- The Sys Module
- Interpreter Information
- STDIO
- Launching External Programs
- Paths, Directories, and Filenames
- Walking Directory Trees
- Grabbing Web Pages
- Sending E-Mail
- Math Functions
- Random Values
- Dates And Times
- Zipped Archives

Lesson 13: An Introduction to Python Classes

- About O-O Programming
- Defining Classes
- Initializers
- Instance Methods
- Properties
- Class Methods and Data
- Static Methods
- Private Methods
- Inheritance
- Untangling the Nomenclature



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Weeks 9-11: Business Process Analysis

Lesson 1: Aligning Data Storytelling to Business Processes

- Understanding the role of data storytelling in business processes
- Identifying business goals and KPIs to guide data storytelling
- Understanding the audience and their needs

Lesson 2: Data Preparation for Data Storytelling

- Best practices for data preparation for effective storytelling
- Techniques for cleaning and preparing data for visualization
- Tips for selecting the right data sources for storytelling

Lesson 3: Identifying and Prioritizing Key Insights

- Techniques for identifying key insights
- Methods for prioritizing insights
- Developing a data story framework

Lesson 4: Structuring Data Stories

- Structuring data stories for effective communication
- Using storytelling techniques to engage stakeholders
- Communicating insights to non-technical audiences

Lesson 5: Effective Data Visualization

- Principles of effective data visualization
- Creating compelling visualizations using Power BI
- Incorporating interactivity into visualizations

Lesson 6: Advanced Data Visualization Techniques

- Advanced visualization techniques for data storytelling
- Using custom visuals to enhance storytelling
- Incorporating animations and transitions into visualizations

Lesson 7: Creating Interactive Reports and Dashboards

- Designing and developing interactive reports using Power BI
- Creating interactive dashboards for stakeholder engagement
- Incorporating data storytelling into interactive reports and dashboards

Lesson 8: Sharing Data Stories and Insights

- Sharing data stories and insights with stakeholders
- Developing a data-driven culture within an organization
- Measuring the impact of data storytelling on business outcomes



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Week 12: AI Foundations

Lesson 1: Introduction to AI

- Overview of AI and its history
- Types of AI: Narrow AI, General AI, Super AI
- Current applications of AI in industry and society

Lesson 2: Machine Learning and Deep Learning

- Introduction to machine learning and deep learning
- Supervised, unsupervised, and reinforcement learning
- Neural networks and deep learning models

Lesson 3: Identifying Valuable Use Cases for AI

- Understanding what makes a good candidate for AI
- Identifying potential AI use cases within an organization
- Translating examples from other organizations to your own organization

Lesson 4: Common AI Models and Terminology

- Overview of common AI models and their applications
- Key AI terminology and concepts
- Choosing the right model for your use case (Across Azure, AWS and GCP)

Lesson 5: Developing and Deploying AI Models

- Understanding the AI development and production process
- Testing and validating AI models (github & Locust)
- Considerations for putting models into Production

Lesson 6: Monitoring and Maintaining AI Models

- Framework for monitoring performance of AI models once in production (Vahlohi & DataBricks)
- Identifying and mitigating model bias
- Ensuring AI models remain up-to-date and relevant
- Each module will have hands-on activities, real-world examples, and assessments to reinforce learning and ensure understanding.

Register for this class by visiting us at:

www.tcworkshop.com or calling us at 800-639-3535