

Forecasting, Behavioral Analysis, and What-If Scenarios with Python (TTPS4883)

Explore Modern Forecasting Methods: Analyze historical data, Identify behavioral patterns, Forecast future trends, and conduct what-if scenario analysis to evaluate potential outcomes

Course Snapshot

- **Course:** Forecasting, Behavioral Analysis, and What-If Scenarios with Python (TTPS4883)
- **Duration:** 3 days
- **Skill-Level:** Intermediate
- **Audience:** This course is designed for data analysts, data scientists, business analysts, and professionals interested in leveraging Python for forecasting, behavioral analysis, and conducting what-if scenarios. Participants should have a solid understanding of Python programming and basic data manipulation.
- **Format / Hands-on:** This course combines engaging instructor-led presentations and practical demonstrations with hands-on exercises, challenge labs, use case exploration and engaging group activities. Student machines are required.
- **Flexible Delivery Options:** This course can be delivered for your team or organization online-live (virtual), onsite in-person, self-paced or across our immersive blended learning experience platform (LXP).
- **Public Schedule:** This course is currently available on our Public Open Enrollment Schedule.
- **Customizable:** We're flexible! This course agenda, topics, labs, hours and delivery modalities can be adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Overview

Forecasting, Behavioral Analysis, and What-If Scenarios with Python is an advanced three-day course that combines the power of forecasting, behavioral analysis, and what-if scenario analysis using Python. The course equips data analysts, data scientists, and business professionals with the skills and techniques required to analyze historical data, identify behavioral patterns, forecast future trends, and conduct what-if scenario analysis to evaluate potential outcomes.

Working in a hands-on learning environment led by our expert practitioner, you'll explore advanced Python libraries and techniques for forecasting, behavioral analysis, and what-if scenario modeling. The course covers advanced forecasting methods such as time series analysis, regression-based forecasting, and machine learning-based forecasting. Participants will also learn how to analyze behavioral patterns through clustering, segmentation, and sentiment analysis. In addition, the course introduces what-if scenarios, enabling participants to simulate and evaluate different scenarios to make informed decisions.

Learning Objectives

This course is approximately **50% hands-on**, combining expert lecture with real-world demonstrations and group discussions with machine-based practical labs and exercises.

Working in a hands-on learning environment, guided by our expert team, attendees will learn to:

- Understand advanced concepts and techniques in forecasting, behavioral analysis, and what-if scenarios.
- Gain proficiency in applying Python libraries and tools for forecasting, behavioral analysis, and what-if scenario modeling.
- Develop forecasting models using time series analysis, regression, and machine learning algorithms.
- Analyze and interpret behavioral patterns through clustering, segmentation, and sentiment analysis. • Conduct what-if scenario analysis to evaluate potential outcomes and make informed decisions.
- Gain practical experience through hands-on labs and exercises using real-world datasets.

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional python, data science, AI / machine learning and other related topics that may be blended with this course for a track that best suits your needs. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience

This course is intended for data analysts, data scientists, business analysts, and professionals who want to leverage Python for forecasting, behavioral analysis, and what-if scenario analysis tasks. Participants should have a solid understanding of Python programming and basic data manipulation skills.

Pre-Requisites

In order to be successful in the course you should have:

- Basic understanding of any programming language: Familiarity with concepts like variables, loops, and functions would be beneficial, even if not in Python.
- Fundamental knowledge of Data Science: A general understanding of what data science is and why it's valuable would help provide context for the Python and data wrangling skills taught in this course.
- Comfort with basic Mathematical Concepts: As Python is heavily used in data analysis, a comfort level with basic math and statistics would be beneficial, though advanced mathematical skills are not necessary.

Take Before:

- TTPS4873 Fast Track to Python in Data Science (3 days)

Follow On Courses:

- TTPS4876 Next Level Python in Data Science (Intermediate) (5 days)
- TTML5506-PMachine Learning Essentials with Python (3 days)

Next Steps / Follow-on Courses: We offer a wide variety of follow-on courses and learning paths for Generative AI, AI for Business, GPT-3.5 / GPT-4, Applied AI, Azure OpenAI, Google BARD, AI for developers, testers, data analytics, machine learning, deep learning, programming, intelligent automation and many other related topics. Please see our catalog for the current **AI & Machine Learning Journeys & Skills Roadmaps**, list courses and programs.

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services** and **Extended Learning Support & Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We can work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.

Day 1: Introduction to Forecasting

1. Overview of Forecasting

- Importance and applications of forecasting
- Types of forecasting problems

2. Time Series Analysis

- Introduction to time series data
- Handling time series data in Python
- Exploratory data analysis for time series

3. Forecasting Methods

- Moving averages
- Exponential smoothing methods
- ARIMA models
- Seasonal decomposition of time series

4. Regression-Based Forecasting

- Introduction to regression analysis
- Building regression models for forecasting
- Evaluating regression models

Day 2: Machine Learning-Based Forecasting

5. Machine Learning for Forecasting

- Introduction to machine learning algorithms for forecasting
- Feature engineering for forecasting
- Training and evaluating machine learning models

- 6. Ensemble Methods for Forecasting**
 - Bagging and random forests
 - Boosting methods
 - Stacking models
- 7. Neural Networks for Time Series Forecasting**
 - Introduction to neural networks
 - Building and training neural network models for forecasting
 - Time series forecasting with recurrent neural networks (RNNs) and LSTM networks
- 8. Evaluating and Improving Forecasting Models**
 - Performance metrics for forecasting
 - Cross-validation and model evaluation techniques
 - Techniques for model improvement and optimization
- Day 3: Behavioral Analysis and What-If Scenarios**
- 9. Introduction to Behavioral Analysis**
 - Understanding behavioral data
 - Applications of behavioral analysis
- 10. Clustering and Segmentation**
 - Clustering techniques for behavioral analysis
 - Segmentation of customers or users based on behavior
 - Practical examples and case studies
- 11. Sentiment Analysis**
 - Introduction to sentiment analysis
 - Text preprocessing techniques
 - Sentiment analysis using Python libraries
- 12. Behavioral Pattern Recognition**
 - Analyzing sequential behavioral data
 - Hidden Markov Models (HMMs) for behavior recognition
 - Application of behavior recognition models
- 13. Introduction to What-If Scenarios**
 - Understanding what-if scenario analysis
 - Identifying key variables and factors
 - Creating scenarios and defining assumptions
- 14. Modeling What-If Scenarios in Python**
 - Implementing what-if scenarios using Python libraries
 - Simulating different scenarios and outcomes
 - Analyzing and evaluating scenario results

Setup Made Simple! Learning Experience Platform (LXP)

All applicable course software, digital courseware files or course notes, labs, data sets and solutions, live coaching support channels and rich extended learning and post training resources are provided for you in our “easy access, no install required” online **Learning Experience Platform (LXP)**, remote lab and content environment. Access periods vary by course. We’ll collaborate with you to ensure your team is set up and ready to go well in advance of the class. Please inquire about set up details and options for your specific course of interest.

For More Information

For more information about our training services (instructor-led, self-paced or blended), collaborative coaching services, robust Learning Experience Platform (LXP), Career Experiences, public course schedule, partner programs, courseware licensing options or to see our complete list of course offerings, solutions and special offers, please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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