



## Hands-On Predictive Analytics with Python

Explore the Python Data Analytics Ecosystem for a Complete Solution, Advanced Algorithms, SciKit Learn, Keras and Much More

[www.triveratech.com](http://www.triveratech.com)

### Course Snapshot

- **Course:** Hands-on Predictive Analytics with Python (TTPS4879)
- **Duration:** 3 days
- **Audience & Skill-Level:** Foundation-level Predictive Analytics with Python skills for Intermediate skilled team members new to these skills. This is not a basic class.
- **Hands-on Learning:** This course is approximately **50% hands-on to 50% lecture ratio**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **blended learning format**. Please also ask about our **Self-Paced / Video / QuickSkills** or **Mini-Camp / Short Course** flexible delivery options.
- **Public Schedule:** This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

### Overview

**Predictive analytics** is an applied field that employs a variety of quantitative methods using data to make predictions. It involves much more than just throwing data onto a computer to build a model. This course provides practical coverage to help you understand the most important concepts of predictive analytics. Using practical, step-by-step examples, we build predictive analytics solutions while using cutting-edge Python tools and packages.

**Hands-on Predictive Analytics with Python** is a three-day, hands-on course that guides students through a step-by-step approach to defining problems and identifying relevant data. Students will learn how to perform data preparation, explore and visualize relationships, as well as build models, tune, evaluate, and deploy models. Each stage has relevant practical examples and efficient Python code. You will work with models such as KNN, Random Forests, and neural networks using the most important libraries in Python's data science stack: NumPy, Pandas, Matplotlib, Seaborn, Keras, Dash, and so on. In addition to hands-on code examples, you will find intuitive explanations of the inner workings of the main techniques and algorithms used in predictive analytics

### Learning Objectives

This course is approximately **50% hands-on**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Our engaging instructors and mentors are highly experienced practitioners who bring years of current "on-the-job" experience into every classroom. Working in a hands-on learning environment, guided by our expert team, attendees will learn to:

- Understand the main concepts and principles of predictive analytics
- Use the Python data analytics ecosystem to implement end-to-end predictive analytics projects
- Explore advanced predictive modeling algorithms w with an emphasis on theory with intuitive explanations
- Learn to deploy a predictive model's results as an interactive application
- Learn about the stages involved in producing complete predictive analytics solutions
- Understand how to define a problem, propose a solution, and prepare a dataset
- Use visualizations to explore relationships and gain insights into the dataset
- Learn to build regression and classification models using scikit-learn
- Use Keras to build powerful neural network models that produce accurate predictions
- Learn to serve a model's predictions as a web application

**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 & Pre-Requisites

This course is geared for Python experienced attendees who wish to learn and use basic machine learning algorithms and concepts.

**Take Before:** Students should have skills at least equivalent to the following course(s) or should have attended as a pre-requisite:

- TTPS4873 Introduction to Python for Data Science

**Follow On Courses:** Our core Python, data science and machine learning training courses provide students with a solid foundation for continued learning based on role, goals, or their areas of specialty. Please see the attached **Python Training Suite** or **Machine Learning Series** list for additional topics and titles.

**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.

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## 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'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience interest and skill-level.*

- 1. The Predictive Analytics Process**
  - Technical requirements
  - What is predictive analytics?
  - Reviewing important concepts of predictive analytics
  - The predictive analytics process
  - A quick tour of Python's data science stack
- 2. Problem Understanding and Data Preparation**
  - Technical requirements
  - Understanding the business problem and proposing a solution
  - Practical project – diamond prices
  - Practical project – credit card default
- 3. Dataset Understanding – Exploratory Data Analysis**
  - Technical requirements
  - What is EDA?
  - Univariate EDA
  - Bivariate EDA
  - Introduction to graphical multivariate EDA
- 4. Predicting Numerical Values with Machine Learning**
  - Technical requirements
  - Introduction to ML
  - Practical considerations before modeling
  - MLR
  - Lasso regression
  - KNN
  - Training versus testing error
- 5. Predicting Categories with Machine Learning**
  - Technical requirements
  - Classification tasks
  - Credit card default dataset
  - Logistic regression
  - Classification trees
  - Random forests
  - Training versus testing error
  - Multiclass classification
  - Naive Bayes classifiers
- 6. Introducing Neural Nets for Predictive Analytics**
  - Technical requirements
  - Introducing neural network models
  - Introducing TensorFlow and Keras
- 7. Model Evaluation**
  - Technical requirements
  - Evaluation of regression models
  - Evaluation for classification models
  - The k-fold cross-validation
- 8. Model Tuning and Improving Performance**
  - Technical requirements
  - Hyperparameter tuning
  - Improving performance
- 9. Implementing a Model with Dash**
  - Technical requirements
  - Model communication and/or deployment phase
  - Introducing Dash
  - Implementing a predictive model as a web application

**Hands-on Setup Made Simple!** All course software (limited versions, for course use only), courseware files or course notes (as applicable), labs / data sets and solutions (as applicable) are provided for you in our “easy access / no install required” high-speed remote lab environment. In most cases, we can also offer local (non-cloud) set up as an alternative. Either way, our dedicated live tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. All your coursework can be accessed or downloaded after class, so you never lose your work or materials. Please ask for details.

### For More Information

All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses, self-paced learning options, recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training, Boot Camps, Skills Immersion Programs, Reskilling Programs, Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at [www.triveratech.com](http://www.triveratech.com), email [Info@triveratech.com](mailto:Info@triveratech.com) or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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