Trivera Technologies LLC

Collaborative IT Training, Mentoring & Courseware Solutions
Educate. Collaborate. Accelerate! | www.triveratech.com

Trivera
TECHNOLOGIES

Mastering Python Programming (with Advanced Topics)

Web Development & Scripting Series | Python Programming Training

Course: TTPS4820 Mastering Python Programming (with Advanced Topics)
Duration: 5 days
Skill Level: Introductory and beyond
Hands-On Format: This hands-on class is approximately 50/50 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.
Delivery Format: We're flexible! This course is available for onsite private classroom presentation, or live online virtual presentation, or can be presented in a combined delivery learning solution. Please also visit our Public Schedule for open-enrollment course dates.
Customizable: This course may be easily tailored to target your specific training skills objectives, tools of choice and learning goals.

Geared for experienced users, **Mastering Python Programming** is an **introductory and beyond**-**level** practical, hands-on Python training course that leads the student from the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with binary data, and using the extensive functionality of Python modules. Extra emphasis is placed on features unique to Python, such as tuples, array slices, and output formatting. This comprehensive, practical course provides an in-depth exploration of working with the programming language, not an academic overview of syntax and grammar. Students will immediately be able to use Python to complete tasks in the real world.

▶ Course Objectives: What You'll Learn

Throughout the course students will be led through a series of progressively advanced topics, where each topic consists of lecture, group discussion, comprehensive hands-on lab exercises, and lab review. This course is "skills-centric", designed to train attendees in essential Python and web development skills, coupling the most current, effective techniques with best practices.

Course Topics Covered: Students will explore:
- Running Python Scripts
- Getting Started
- Flow Control
- Sequence Data
- Defining Functions
- Working with Files
- Dictionaries and Sets
- Errors and Exception Handling
- Using Modules
- Regular Expressions
- Highlights of the Standard Library
- Introduction to Python Classes
- Real-life programming
- Special data types
- Network services
- Dates and times

Working within in an engaging, hands-on learning environment, guided by our expert Python practitioner, students will learn to:
- Create working Python scripts following best practices
- Use python data types appropriately
- Read and write files with both text and binary data
- Search and replace text with regular expressions
- Get familiar with the standard library and its work-saving modules

- Use lesser-known but powerful Python data types
- Create "real-world", professional Python applications
- Work with dates, times, and calendars
- Know when to use collections such as lists, dictionaries, and sets
- Understand Pythonic features such as comprehensions and iterators
- Write robust code using exception handling

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be easily adjusted to accommodate. We offer additional Python programming courses which may be blended with this course for a track that best suits your development objectives.

Hands- on Learning: This course is about **50% hands-on lab and 50% lecture,** with extensive programming exercises designed to reinforce fundamental skills and concepts learned in the lessons. **Students will write numerous Python scripts** to reinforce the major concepts covered in this course. The courses will increase in complexity as more sophisticated techniques are introduced. Our courses include ample materials and labs to ensure all students are either appropriately challenged, or assisted, at all times – no matter their skill level.

▶ Audience: Who Should Attend

This course is appropriate for advanced users, system administrators and web site administrators who want to use Python to support their server installations, as well as anyone else who wants to automate or simplify common tasks with the use of Python scripts.

Students should already have a working, user-level knowledge of Unix/Linux, Mac, or Windows. While not required, basic skills with at least one other programming language will be helpful.

Python Programming Training Series

Trivera Technologies
Collaborative IT Training, Mentoring & Courseware Solutions
w w w . t r i v e r a t e c h . c o m | Info@triveratech.com

Trivera TECHNOLOGIES

▶ **Related Courses: Pre-Requisites & Learning Path**

Take Instead: We offer other courses that provide different levels of knowledge or focus:

- TTEY101 Introduction to Python Programming (3 days)
- TTPS4810: Python Programing Essentials (4 days - subset)
- TTPS4870: Python for Scientists (5 days)

Take After: We offer a variety of introductory through advanced web development, programming, design and mobile development courses and learning tracks.

Some recommended follow-on courses include:

- TTPS4850: Advanced Python Programming (4 days)

Please contact us for recommended next steps tailored to your longer term education, project, role or web development objectives. We will collaborate with you to design the best solution to ensure your needs are met, whether we customize the material, or devise a different educational path to help your team best prepare for this training.

▶ **Workshop Topics Covered**

Session 1: An Overview of Python
- What is python?
- 1 -- An overview of Python
- What is python?
- Python Timeline
- Advantages/Disadvantages of Python
- Getting help with pydoc

Session 2: The Python Environment
- Starting Python
- Using the interpreter
- Running a Python script
- Python scripts on Unix/Windows
- Editors and IDEs

Session 3: Getting Started
- Using variables
- Builtin functions
- Strings
- Numbers
- Converting among types
- Writing to the screen
- Command line parameters

Session 4: Flow Control
- About flow control
- White space
- Conditional expressions
- Relational and Boolean operators
- While loops
- Alternate loop exits

Session 5: Sequences
- About sequences
- Lists and list methods
- Tuples
- Indexing and slicing
- Iterating through a sequence
- Sequence functions, keywords, and operators
- List comprehensions
- Generator Expressions
- Nested sequences

Session 6: Working with files
- File overview
- Opening a text file
- Reading a text file
- Writing to a text file
- Reading and writing raw (binary) data
- Converting binary data with struct

Session 7: Dictionaries and Sets
- About dictionaries
- Creating dictionaries
- Iterating through a dictionary
- About sets
- Creating sets
- Working with sets

Session 8: Functions
- Defining functions
- Parameters
- Global and local scope
- Nested functions
- Returning values

Session 9: Sorting
- The sorted() function
- Alternate keys
- Lambda functions
- Sorting collections
- Using operator.itemgetter()
- Reverse sorting

Session 10: Errors and Exception Handling
- Syntax errors
- Exceptions
- Using try/catch/else/finally
- Handling multiple exceptions
- Ignoring exceptions

Session 11: Modules and Packages
- The import statement
- Module search path
- Creating Modules
- Using packages
- Function and Module aliases

Session 12: Classes
- About o-o programming
- Defining classes
- Constructors
- Methods
- Instance data
- Properties
- Class methods and data

Session 13: Regular Expressions
- RE syntax overview
- RE Objects
- Searching and matching
- Compilation flags
- Groups and special groups
- Replacing text
- Splitting strings

Session 14: The standard library
- The sys module
- Launching external programs
- Math functions
- Random numbers
- The string module
- Reading CSV data

Session 15: Dates and times
- Working with dates and times
- Translating timestamps
- Parsing dates from text
- Formatting dates
- Calendar data

Session 16: Working with the file system
- Paths, directories, and filenames
- Checking for existence

Python Programming Training Series

Trivera Technologies
Collaborative IT Training, Mentoring & Courseware Solutions
w w w . t r i v e r a t e c h . c o m | Info@triveratech.com

Trivera TECHNOLOGIES

- Permissions and other file attributes
- Walking directory trees
- Creating filters with fileinput
- Using shutil for file operations
- 17 – Advanced data handling
- Defaultdict and Counter
- Prettyprinting data structures
- Compressed archives (zip, gzip, tar, etc.)
- Persistent data

Session 18: Network services
- Grabbing web content
- Sending email
- Using SSH for remote access
- Using FTP

Session 19: Writing real-life applications
- Parsing command-line options
- Detecting the current platform
- Trapping signals
- Implementing logging
- Python Timeline
- Advantages/Disadvantages of Python
- Getting help with pydoc

▶ Student Materials: What You'll Receive

Our robust course materials include much more than a simple slideshow presentation handout. Student materials include a comprehensive hard-copy course manual, complete with detailed course notes, detailed lab manuals and workbooks, code samples, software tutorials, diagrams and current reference materials, all directly related to the course at hand, indexed for ease of use. Step-by-step lab instructions, software tutorials and project descriptions are clearly illustrated and commented for maximum learning.

▶ Setup Made Simple!

Our mission is to ensure a smooth start to your course with minimum set up burden for your team or firm. We offer several course set up options to help meet that goal. Please inquire for details on requirements and costs.
- **Manual Course Setup.** Our team provides a detailed setup guide with specific instructions, packaged software and links for all course tools and labs, as well as much live assistance as required to prepare your attendees or classroom for the course.
- **Remote Lab Environment**. Your team can access our hosted environment to access and use the software, labs and tools required for the hands-on portion of the training.
- **Provide Pre-Loaded Equipment**. If needed, we can ship in pre-loaded equipment to your site.

▶ Focused, Skills-Driven Training | Maximizing Your Training Time and Value, while Reducing Risk

Our training programs are designed to be skills-driven, focused events, targeted to deliver the true skills you need to succeed in

your projects and role. We'll work with you to ensure that your valuable training time and dollar is truly maximized. If your team requires more or less advanced materials or additional or custom topics, this course may be easily adjusted to accommodate. We offer and can blend on a wide variety of surrounding and supporting tools and elements to build out a truly robust educational experience, for you, your team, or your entire organization.

Please contact us for details about our **Extended Education Programs** that support, surround, supplement or extend your learning initiatives such as
- **Collaborative mentoring** for your team
- **Pre-and post-training assessments** help place learners on the right path
- Mentored, comprehensive **case-studies** can be woven into your training programs, complete with guided work and instructor interaction
- **Guided or self-paced projects**, homework and exams
- **Interactive, self-paced programs** students
- **Virtual lab hours** and/or constant Mentor access
- Role-basic, Topic-based or Goal-based corporate **Training Roadmap and Learning Paths development**, rollout and support
- Skills-focused custom **New Hire Training Programs** and team **Reskilling initiatives**
- **Learning Management or Vendor Management Services** for your organization
- Plus many additional, flexible learning modules, initiatives and programs that can be delivered across a variety of subjects and modalities, completely tailored for your organization.

▶ Why Choose Trivera Technologies?

Whether you're a manager choosing a training provider or course to bring to your team, an instructor looking for reliable, solid course materials, or a student looking for an exciting, targeted training class to attend or to recommend to your colleagues - *Our single focus is to make YOUR training event or experience a success*. Here's why choosing Trivera Technologies as your **web development training, mentoring and courseware resource** takes the risk right out of your decision making process…
- **Our 'skills-driven' courses are efficient, focused, current and comprehensive.** Our experts target exactly the skills your team needs to succeed in their jobs, projects or roles, rather than taking a 'laundry-list' approach to training, which can often result in overtraining, course overload or overwhelmed students. We'll work with you to define what it is you need to accomplish, and create the right program, training to those goals. Students of all skill levels will be able to hit the ground running with their new skills right after class ends, since the program was correctly designed from the start.

Python Programming Training Series

Trivera Technologies

Collaborative IT Training, Mentoring & Courseware Solutions
w w w . t r i v e r a t e c h . c o m | Info@triveratech.com

Trivera TECHNOLOGIES

- **Our content is always updated and ready to go.** Our dedicated course development team keeps our training content, courses and student resources completely updated with the latest skills, industry trends and software editions to ensure your team is always getting the most current information, techniques and skills available.

- **Every training event is Unique and Important!** The Trivera team treats every delivery engagement like a first-run, important event, not simply a staffing assignment. For every class we deliver, our team works closely with yours to ensure that your course runs smoothly from start to finish, and that there are **no surprises** in the classroom for you, your students or the instructors. Our experts work with you to choose the right topics and courses that align with your true skills goals, tuning as needed. We align the best all-around trainer to fit your exact needs – not just whoever happens to be 'on the bench'. We offer pre-reading, quizzes and support resources to help assess and prepare your team for the training, so we can best tune the training and maximize their time in the classroom. We'll ensure that your classroom is set up and ready to go prior to course start. Throughout the course delivery, our instructors constantly evaluate the class delivery and students, tuning topics, activities, discussions and labs as needed to ensure all student skill levels and needs are targeted. All activities, data and results are documented and shared with your firm so you have a complete picture of the course and its results, throughout the course delivery, and afterwards. Post training support is also included for your students to address any future related questions.

- **We wholly-own our course content, giving Trivera flexibility & quality above the rest.** Our course materials are **owned** by our company and *fully customizable at little or no cost*. Dozens of training firms and independent instructors purchase and use our course materials, and hire us for training support as well. As a result, our courseware is subject to very stringent quality requirements. Not only will your organization benefit from our own technical team's technical expertise, but also from the feedback of hundreds of students and trainers using these materials, worldwide, on a regular basis. This unique fact guarantees that our materials are not only robust and interesting, but also technically correct, current and of the highest quality and usability.

- **We bring years of practical, current experience into the classroom and content.** Our dynamic instructors and course authors are also skilled Java, JEE, J2EE, .Net, SOA, and web services developers, architects and security-oriented professionals, currently active in their fields. This real-world experience translates directly to your classroom, and into our course materials.

- **We're Java & JEE authors and industry speakers.** Our team was selected to write the online *JEE, EJB, EJB CMP-CMR a*nd *Web Services Tutorial Series for IBM developerWorks®.* These are the same instructors who train our classes and author the courseware. Most of our trainers/consultants have also authored additional articles on web services, EJB, Struts, JEE and advanced Java topics, and are recognized speakers and presenters on the industry technical seminar circuit. Our team is comprised on several successful published authors. Members of our team have written or contributed to: *Eclipse Kick Start, Mastering Eclipse; Professional Jakarta Struts; Using Java Tools for Extreme Programming; Mastering Resin; Mastering TomCat and others.*

- **Need a small-business status with whom to team?** Trivera Technologies is a 100% Woman-Owned Small Business Concern. Please contact us to team with us for your small-business or woman-owned set aside opportunities.

- *Our prices and services are guaranteed.* We stand behind our courses and instructors 100%. We'll match or beat any pricing for similar services, any time. Whether you're a stakeholder organizing your firm's educational services, a student in our live or virtual classroom or a trainer using our materials to educate your own client or team – **Our core mission is to make YOU a success in the classroom**.

▶ For More Information

Need dedicated training? All courses can be brought **onsite** or produced **online** / virtually for a private presentation, customized to suit your unique requirements or goals. Please contact us for course details and Special Discount Offers. Our pricing is always cost effective, and our services are guaranteed. Please also visit our **Public Training Schedule** for available open enrollment dates that may apply. Please contact **Training@triveratech.com** for more information, pricing and special offers.

Need courseware or courseware development services? Let us take the risk out of your next courseware purchase, curriculum development project or classroom delivery! All Trivera Technologies course materials are available for corporate license and customization, with complete instructor support and free corporate branding. Samples are available upon request. Please contact us at **Courseware@triveratech.com** for details, options and excellent pricing.

For more information about our training services, collaborative mentoring services, courseware licensing options, courseware development services, public course schedule, training management services, partner and reseller programs, or to see our complete list of course offerings please visit us at **www.triveratech.com**, email **Info@triveratech.com** or call **609.953.1515**.

TRIVERA TECHNOLOGIES | Collaborative IT Training, Mentoring & Courseware Solutions
www.triveratech.com | 609.953.1515 | Info@triveratech.com | Twitter TriveraTech

ONSITE & ONLINE TRAINING | PUBLIC / OPEN ENROLLMENT COURSES | COURSEWARE LICENSING & DEVELOPMENT
MENTORING | ASSESSMENTS | LEARNING PLAN DEVELOPMENT | PARTNER PROGRAMS | CORPORATE TRAINING MANAGEMENT SERVICES