PCAP™ – CERTIFIED ASSOCIATE IN PYTHON PROGRAMMING

Exam PCAP-31-03 • Course Outline

Duration: 3 Days

Certification Body: Python Institute (OpenEDG)

Delivered By: Rynet Malaysia – Official Python Institute Education Partner

Exam Voucher: Included – no additional purchase required

Course Overview

This 3-day instructor-led course prepares participants to sit the PCAP-31-03 exam, the intermediate-level Python Institute certification that validates the skills needed to design, write, and maintain moderately advanced, object-oriented Python code. It is the natural next step after PCEP (Entry-Level) and builds toward professional Python competency in modules, exception handling, string processing, object-oriented programming, and functional programming constructs.

Who Should Attend

- Developers who have completed PCEP or have equivalent foundational Python knowledge
- Programmers moving from procedural scripts to structured, object-oriented Python applications
- IT professionals preparing for the official PCAP-31-03 certification exam

Prerequisites

Basic working knowledge of Python fundamentals (variables, control flow, functions, and basic data structures) – equivalent to PCEP-level competency.

Learning Outcomes

By the end of the course, participants will be able to:

- Design and structure Python programs using custom modules and packages
- Implement robust error handling with built-in and custom exceptions
- Manipulate and process text using Python's string toolkit
- Apply object-oriented principles to build and extend class hierarchies
- Write concise, functional-style Python using comprehensions, lambdas, and closures
- Perform file input/output operations confidently

METHODOLOGY:

This program will be conducted with interactive lectures, PowerPoint presentations, discussions, and practical exercises. This course can be conducted as instructor-led (ILT) or virtual instructor-led training (VILT).

JOB SCOPE:

- Python Developer
- GenAI Engineer
- Backend Developer
- Automation/Scripting Developer

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Detailed Course Outline

Module	Topics Covered	Weight
Module 1 *Modules and Packages*	• Import variants: import, from import, import as, import * • Advanced qualifying for nested modules; dir() function; sys.path variable • The math module: ceil(), floor(), trunc(), factorial(), hypot(), sqrt() • The random module: random(), seed(), choice(), sample() • The platform module: platform(), machine(), processor(), system(), version() • Creating user-defined modules and packages; __pycache__, __name__, __init__.py • Public/private variables; nested packages vs. directory trees	12%
Module 2 *Exceptions*	• Handling errors: except, except-except, except-else, except (e1, e2) • The exception hierarchy; raise and raise ex; assert • Event classes; except E as e; the arg property • Extending the exception hierarchy with self-defined exceptions	14%
Module 3 *Strings*	• Machine representation of characters: ASCII, Unicode, UTF-8, code points, escape sequences • Operating on strings: ord(), chr(), indexing, slicing, immutability • Iterating, concatenating, multiplying, comparing; in / not in operators • Built-in string methods: .isxxx(), .join(), .split(), sorted(), .index(), .find(), .rfind()	18%
Module 4 *Object-Oriented Programming*	• OOP concepts: class, object, property, method, encapsulation, inheritance • Instance vs. class variables; __dict__ property; private components; name mangling • Declaring and using methods; the self parameter • Class structure: introspection, hasattr(); __name__, __module__, __bases__ • Building class hierarchies: single/multiple inheritance, isinstance(), overriding • Polymorphism; overriding __str__(); diamond inheritance • Constructing and initializing objects	34%
Module 5 *Miscellaneous – List Comprehensions, Lambdas, Closures & I/O*	• Building complex lists using list comprehension (if operator, nested comprehensions) • Lambda functions; functions taking lambdas as arguments; map(), filter() • Defining and using closures • I/O terminology: modes, predefined streams, handles vs. streams, text vs. binary • I/O operations: open(), errno, close(), .read(), .write(), .readline(), readlines() • Using bytearray as an input/output buffer	22%

Certification

This course maps directly to the official PCAP-31-03 syllabus (Status: Live & Active). As Malaysia's official Python Institute Education Partner, Rynet includes the official PCAP exam voucher in the course fee – no additional purchase required.

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