

CompuScholar, Inc.

Alignment to "PCEP 30-02 - Certified Entry-Level Python Programmer" Certification Exam Requirements

PCEP 30-02 Exam Details:

Exam Title:	PCEP 30-02 - Certified Entry-Level Python Programmer
Exam Link:	https://pythoninstitute.org/pcep

CompuScholar currently has two Python-based courses:

- **"Python Programming"** is a 1-semester course covering introductory concepts.
- **"Computer Science Foundations"** is a 2-semester course covering introductory concepts and additional computer science theory.

Both courses are introductory in nature and do not cover some intermediate or advanced topics on the PCEP exam. See the "Python Prog." and "CSF" citation columns below for details.

CompuScholar Course Details:

Course Title:	Python Programming
Course ISBN:	978-1-946113-00-9
Course Year:	2023

CompuScholar Course Details:

Course Title:	Computer Science Foundations
Course ISBN:	978-1-946113-02-3
Course Year:	2023

Note 1: Citation(s) listed may represent a subset of the instances where objectives are met throughout the course.

Note 2: Citation(s) for a "Lesson" refer to the "Lesson Text" elements and associated "Activities" within the course, unless otherwise noted. The "Instructional Video" components are supplements designed to introduce or reinforce the main lesson concepts, and the Lesson Text contains full details.

Exam Description

"PCEP™ – Certified Entry-Level Python Programmer certification shows that the individual is familiar with universal computer programming concepts like data types, containers, functions, conditions, loops, as well as Python programming language syntax, semantics, and the runtime environment." (from the Exam Link)

Exam Requirements

Section 1: Computer Programming and Python Fundamentals (18%)	PYTHON PROG. CITATION(S)	CSF CITATION(S)
PCEP-30-02 1.1 – Understand fundamental terms and definitions		
• interpreting and the interpreter, compilation and the compiler	Chapter 1, Lesson 2	Chapter 3, Lesson 2
• lexis, syntax, and semantics	As needed throughout	As needed throughout
PCEP-30-02 1.2 – Understand Python’s logic and structure		
• keywords	Chapter 2, Lesson 1	Chapter 4, Lesson 2
• instructions	Chapter 1, Lesson 3	Chapter 3, Lesson 3
• indentation	Chapter 1, Lesson 3	Chapter 3, Lesson 3
• comments	Chapter 1, Lesson 3	Chapter 3, Lesson 3
PCEP-30-02 1.3 – Introduce literals and variables into code and use different numeral systems		
• Boolean, integers, floating-point numbers	Chapter 2, Lesson 1	Chapter 4, Lesson 2
• scientific notation	N/A	N/A
• strings	Chapter 2, Lesson 3	Chapter 4, Lesson 4
• binary, octal, decimal, and hexadecimal numeral systems	Suppl. Ch. 3, Lesson 1	Chapter 10, Lesson 4 (Binary/Decimal)
• variables	Chapter 2	Chapter 4
• naming conventions	Chapter 2, Lesson 1	Chapter 4, Lesson 2
• implementing PEP-8 recommendations	N/A	N/A
PCEP-30-02 1.4 – Choose operators and data types adequate to the problem		
• numeric operators: <code>** * / % // + -</code>	Chapter 2, Lesson 2	Chapter 4, Lesson 3
• string operators: <code>* +</code>	Chapter 2, Lesson 3 (+)	Chapter 4, Lesson 4 (+)
• assignment and shortcut operators	Chapter 2 (Assignment)	Chapter 4 (Assignment)
• unary and binary operators	N/A	N/A
• priorities and binding	Chapter 4, Lesson 4	Chapter 6, Lesson 4
• bitwise operators: <code>~ & ^ << >></code>	N/A	N/A

• Boolean operators: not, and, or	Chapter 4, Lesson 4	Chapter 6, Lesson 4
• Boolean expressions	Chapter 4, Lesson 1	Chapter 6, Lesson 1
• relational operators (== != > >= < <=)	Chapter 4, Lesson 1	Chapter 6, Lesson 1
• the accuracy of floating-point numbers	N/A	N/A
• type casting	N/A	N/A
PCEP-30-02 1.5 – Perform Input/Output console operations		
• the print() and input() functions	Chapter 3, Lessons 1, 2	Chapter 5, Lessons 1, 2
• the sep= and end= keyword parameters	Chapter 3, Lesson 1	Chapter 5, Lesson 1
• the int() and float() functions	Chapter 3, Lesson 2	Chapter 5, Lesson 2

Section 2: Control Flow – Conditional Blocks and Loops (29%)	PYTHON PROG. CITATION(S)	CSF CITATION(S)
PCEP-30-02 2.1 – Make decisions and branch the flow with the if instruction		
• conditional statements: if, if-else, if-elif, if-elif-else	Chapter 4, Lesson 2	Chapter 6, Lesson 2
• multiple conditional statements	Chapter 4, Lesson 3	Chapter 6, Lesson 3
• nesting conditional statements	Chapter 4, Lesson 3	Chapter 6, Lesson 3
PCEP-30-02 2.2 – Perform different types of iterations		
• the pass instruction	N/A	N/A
• building loops with while, for, range(), and in	Chapter 6, Lessons 3, 4	Chapter 8, Lessons 1, 2
• iterating through sequences	Chapter 6, Lessons 3, 4	Chapter 8, Lessons 1, 2
• expanding loops with while-else and for-else	Chapter 6, Lessons 3, 4	Chapter 8, Lessons 1, 2
• nesting loops and conditional statements	Chapter 6, Lessons 3, 4	Chapter 8, Lessons 1, 2
• controlling loop execution with break and continue	Chapter 6, Lessons 3, 4	Chapter 8, Lesson 3

Section 3: Data Collections – Tuples, Dictionaries, Lists, and Strings (25%)	PYTHON PROG. CITATION(S)	CSF CITATION(S)
PCEP-30-02 3.1 – Collect and process data using lists		
• constructing vectors	N/A	N/A
• indexing and slicing	Chapter 6, Lesson 1 Chapter 8, Lesson 2	Chapter 9, Lesson 1 Chapter 11, Lesson 2
• the len() function	Chapter 6, Lesson 2	Chapter 9, Lesson 2
• list methods: append(), insert(), index(), etc.	Chapter 6, Lesson 2	Chapter 9, Lesson 2
• functions: len(), sorted()	Chapter 6, Lesson 2 (len() and sort())	Chapter 9, Lesson 2 (len() and sort())
• the del instruction	N/A	N/A
• iterating through lists with the for loop	Chapter 6, Lesson 3	Chapter 9, Lesson 3
• initializing loops	Chapter 6, Lessons 3, 4	Chapter 8, Lessons 1, 2
• the in and not in operators	Chapter 6, Lesson 3 (in)	Chapter 8, Lesson 1 (in)
• list comprehensions	N/A	N/A
• copying and cloning	N/A	N/A
• lists in lists: matrices and cubes	N/A	N/A
PCEP-30-02 3.2 – Collect and process data using tuples		
• tuples: indexing, slicing, building, immutability	Chapter 6, Lesson 1	Chapter 9, Lesson 1
• tuples vs. lists: similarities and differences	Chapter 6, Lesson 1	Chapter 9, Lesson 1
• lists inside tuples and tuples inside lists	N/A	N/A
PCEP-30-02 3.3 Collect and process data using dictionaries		
• dictionaries: building, indexing, adding and removing keys	N/A	N/A
• iterating through dictionaries and their keys and values	N/A	N/A
• checking the existence of keys	N/A	N/A
• methods: keys(), items(), and values()	N/A	N/A

PCEP-30-02 3.4 Operate with strings		
• constructing strings	Chapter 2, Lesson 3 Chapter 3, Lesson 3	Chapter 4, Lesson 4 Chapter 5, Lesson 3
• indexing, slicing, immutability	Chapter 8, Lessons 1, 2	Chapter 11, Lessons 1, 2
• escaping using the \ character	Chapter 8, Lesson 1	Chapter 11, Lesson 1
• quotes and apostrophes inside strings	Chapter 8, Lesson 1	Chapter 11, Lesson 1
• multi-line strings	N/A	N/A
• basic string functions and methods	Chapter 8, Lesson 2	Chapter 11, Lesson 2

Section 4: Functions and Exceptions (28%)	PYTHON PROG. CITATION(S)	CSF CITATION(S)
PCEP-30-02 4.1 – Decompose the code using functions		
• defining and invoking user-defined functions and generators	Chapter 9, Lesson 1 (Functions)	Chapter 12, Lesson 1 (Functions)
• the return keyword, returning results	Chapter 9, Lesson 2	Chapter 12, Lesson 2
• the None keyword	Chapter 11, Lesson 3	N/A
• recursion	N/A	N/A
PCEP-30-02 4.2 – Organize interaction between the function and its environment		
• parameters vs. arguments	Chapter 9, Lesson 2	Chapter 12, Lesson 2
• positional, keyword, and mixed argument passing	Chapter 9, Lesson 2	Chapter 12, Lesson 2
• default parameter values	Chapter 9, Lesson 2	Chapter 12, Lesson 2
• name scopes, name hiding (shadowing), and the global keyword	Chapter 9, Lesson 3	Chapter 12, Lesson 3

PCEP-30-02 4.3 – Python Built-In Exceptions Hierarchy		
• BaseException	Chapter 5, Lesson 1 Chapter 8, Lesson 3 Exceptions are introduced and caught with try/except, but we do not explore different types	Chapter 7, Lesson 1 Chapter 11, Lesson 3 Exceptions are introduced and caught with try/except, but we do not explore different types
• Exception		
• SystemExit		
• KeyboardInterrupt		
• abstract exceptions		
• ArithmeticError		
• LookupError		
• IndexError		
• KeyError		
• TypeError		
• ValueError		
PCEP-30-02 4.4 – Basics of Python Exception Handling		
• try-except / the try-except Exception	Chapter 8, Lesson 3	Chapter 11, Lesson 3
• ordering the except branches	N/A	N/A
• propagating exceptions through function boundaries	N/A	N/A
• delegating responsibility for handling exceptions	N/A	N/A