

COURSE OUTLINE		
<b>TERM: SPRING 2023</b>	<b>COURSE NO: COMP 135</b>	
<b>INSTRUCTOR:</b>	<b>COURSE TITLE: PYTHON ESSENTIALS</b>	
<b>OFFICE: LOCAL:</b> <b>E-MAIL: @capilanou.ca</b>	<b>SECTION NO(S):</b>	<b>CREDITS: 1.0</b>
<b>OFFICE HOURS:</b>		
<b>COURSE WEBSITE:</b>		

Capilano University acknowledges with respect the Lil'wat, Musqueam, Squamish, Sechelt, and Tsleil-Waututh people on whose territories our campuses are located.

### COURSE FORMAT

Self-paced online; approximately 40 hours of coursework completed within a 15-week period.

### COURSE PREREQUISITES/COREQUISITES

COMP 120 (C-) as prerequisite or corequisite

### CALENDAR DESCRIPTION

This short course introduces students who are proficient in at least one programming language, such as C, R, Java or JavaScript, to the core elements of Python programming. Students learn to write clean code with Python's built-in data types and control structures, while reinforcing best-practices, like unit testing, and fundamental principles of program design, including decomposition and abstraction. Practical, hands-on projects allow students to develop capacity for problem solving and sharpen their programming and object-oriented programming skills.

### COURSE NOTE

COMP 135 is an approved Numeracy course for Cap Core course requirements.

COMP 135 is an approved Science and Technology course for Cap Core requirements.

COMP 135 is an approved Science course.

COMP 135 is an approved Quantitative/Analytical course for baccalaureate degrees.

### REQUIRED TEXTS AND/OR RESOURCES

**Textbook:** Brad Miller, David Ranum, Jeffrey Elkner, Peter Wentworth, Allen B. Downey, Chris Meyers, and Dario Mitchell. *How to Think Like a Computer Scientist: Interactive Edition* at <https://runestone.academy/runestone/books/published/thinkcspy/index.html>

**Technological requirements:** To participate in this course, students must have access to a stable WIFI connection and a WIFI-enabled desktop computer or a laptop. Please contact [ithelp@capilanou.ca](mailto:ithelp@capilanou.ca) if you require any technology support.

## COURSE STUDENT LEARNING OUTCOMES

### On successful completion of this course, students will be able to do the following:

- Read a Python program and explain the semantics of all of its structures, including its data types, variables, functions, parameters, and control structures;
- Identify the similarities and differences between the Python programming language and another they are familiar with;
- Apply principles of abstraction, decomposition, and pattern recognition to design structured solutions for small problems;
- Code their designs in the Python programming language;
- Develop functional unit tests;
- Apply simple Python objects and built-in data structures appropriately;
- Explain differences between procedural and object-oriented programming paradigms.

### Students who complete this Numeracy course will be able to do the following:

- Apply both analytical and numerical skills to solve problems;
- Summarize and analyze data in quantitative forms;
- Interpret and draw conclusions from an analysis of quantitative data;
- Represent quantitative information in a variety of forms (e.g. symbolically, visually, numerically, and verbally);
- Incorporate quantitative evidence in support of an argument.

### Students who complete this Science and Technology course will be able to do the following:

- Apply numerical and computational strategies to solve problems;
- Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information);
- Demonstrate how a problem, concept, or process can be modelled numerically, graphically, or algorithmically;
- Explain how scientific inquiry is based on investigation of evidence and evolves based on new findings;
- Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results.

## COURSE CONTENT

- Data Representations: types, analysis, abstraction; literal values, primitives, strings, tuples, lists, dictionaries, objects
- Coding Basics: variables, operators, expressions, statements, control structures, functions, input/output, files
- Problem Solving: decomposition, pattern recognition, data modeling, algorithm design
- Design Principles: abstraction, patterns; DRY, coupling, cohesion
- Automated testing.

## EVALUATION PROFILE

Final grades for the course will be computed based on the following schedule:

Lessons Completion	15%
Quizzes	25%
Programming Assignments	25%
Final Project	35%
<b>TOTAL</b>	<b>100%</b>

## GRADING PROFILE

A+ 90 - 100%	B+ 77 - 79%	C+ 67 - 69%	D 50 - 59%
A 85 - 89%	B 73 - 76%	C 63 - 66%	F 0 - 49%
A- 80 - 84%	B- 70 - 72%	C- 60 - 62%	

Students should refer to the University Calendar for the effect of the above grades on grade point average.

### Incomplete Grades

Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

### Late Assignments

The assignments submitted after 15 weeks from the enrollment will not be accepted.

### English Usage

Students are expected to proofread all written work for any grammatical, spelling and stylistic errors. Instructors may deduct marks for incorrect grammar and spelling in written assignments.

### Electronic Devices

Students may use electronic devices they find useful to complete their coursework.

### On-line Communication

Instructors will communicate with students using either their official Capilano University email or eLearn; please check both regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

## UNIVERSITY OPERATIONAL DETAILS

### Tools for Success

Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: <https://www.capilanou.ca/student-life/>

**Capilano University Security: download the [CapU Mobile Safety App](#)****Policy Statement (S2009-06)**

Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Academic Integrity, Academic Probation and other educational issues. These and other policies are available on the University website.

**Academic Integrity (S2017-05)**

Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy and procedures S2017-05 Academic Integrity for more information: <https://www.capilanou.ca/about-capu/governance/policies/>

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

**Academic dishonesty** is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

**Cheating:** Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:

- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

**Fraud:** Creation or use of falsified documents.

**Misuse or misrepresentation of sources:** Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

**Plagiarism:** Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

**Self-Plagiarism:** Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

**Prohibited Conduct:** The following are examples of other conduct specifically prohibited:

- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

### **Sexual Violence and Misconduct**

All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence and Misconduct Policy and B.401.1 Sexual Violence and Misconduct Procedure (found on Policy page <https://www.capilanou.ca/about-capu/governance/policies/>)

### **Emergencies:**

Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.

### **DEPARTMENT OR PROGRAM OPERATIONAL DETAILS:**

#### **COMPUTER ACCESS**

Every effort is made to ensure that required course software can be freely downloaded and installed on student computer. However, it is the responsibility of each student to ensure their computer meets the minimum requirements of required course software, and to perform the installation and configuration of such software themselves.

Computer labs at the University will have course-required software installed and configured; students may use lab computers to complete all their course work.

Drop-in access to the University computers is available during the hours posted outside each lab, subject to availability. Please respect an instructor's directions if asked to leave the lab due to a class booking.

University policies on student conduct and use of University computer systems, available on the University website, will be strictly enforced.