THE UNIVERSITY OF BRITISH COLUMBIA
School of Information
Faculty of Arts

Python Programming Course

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Class Location: Terrace Lab (UBC iSchool)

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Welcome to Python Programming Course! I have built this class specifically for those with no prior programming experience. With relatively simple basic exercises that focus on the core concepts of programming, I hope that you will gain a solid understanding of the topics in this course and be well prepared to take the rest of the more advanced programming courses. I expect that someone who knows another programming language and is just trying to learn Python should be able to go through the material easily.

Ground Rules

I expect everyone to be mindful of what they say and its potential impact on others. The goal is to have respectful discussions that do not violate the community space created for these conversations. Here are some productive ways to engage in this course:

- **Participate:** Read or listen to what others have written or said and share your thoughts.

- **Stay curious:** Learn from each other by listening and asking questions, not making assumptions.

- **Keep your passion positive:** When replying to a discussion forum post, respond with thoughts on what was said, not about the person who posted. Avoid using all caps, too many exclamation points, or aggressive language.

- **COVID-19 Safety**: Per the most recent UBC Broadcast, you are no longer required to wear a mask, yet UBC recommends that you do it in indoor public spaces. Daily health checks and frequent hand-washing are advisable. Whether you choose to wear a mask or not, please be mindful and accepting of each other's choices and comfort levels as we navigate the new academic year. Please maintain a respectful environment (UBC Respectful Environment Statement).

Academic Honesty

All submitted work should be your own and academic dishonesty is not allowed. Academic dishonesty can be defined as:

- Copying answers

- Copying words, ideas, or other materials from another source without giving credit to the original author

- Copying from your peers within the course

- Employing or allowing another person to alter or revise your work, and then submitting the work as your own

Please don't share or reuse solutions to assignments which is an academic integrity concern. Please do not:

- Share the complete assignment code in the course discussion forums

- Upload completed assignments to public websites with the goal of sharing solutions. (You can share your work and ideas for professional purposes though)

Contents

1.1. Why Program?

We learn why one might want to learn to program and look at the basic issues with learning to program.

1.2. Installing Python

2. Variables, expressions, and statements

We learn how to make variables and store data in those variables.

3. Conditional Execution

We look at how Python executes some statements and skips others.

4. Functions

Take a brief look at how Python implements the 'store and use later' programming pattern.

5. Loops and Iterations

We look at how Python repeats statements using looping structures.

6. Strings

We look at how Python stores and manipulates textual data using string variables and functions.

7. Files

We learn how to open data files on your computer and read through the files using Python.

8. Lists

We look at Python's simplest data structure - the list. Lists can store more than one item in a variable.

9. Dictionaries

The dictionary data structures allow us to store multiple values in an object and look up the values by their key.

10. Tuples

The tuple is a Python data structure that is like a simple and efficient list.

11. Regular Expressions

Regular Expressions allow us to search for patterns in strings and extract data from strings using the regular expression programming language.

12. Object-Oriented Programming

We do a quick look at how Python supports the Object-Oriented programming pattern.

13. Databases

Databases give us very fast random access to large amounts of data. There is a lot of material as we learn the Structured Query Language (SQL).

14. Data Visualization

We learn how to explore the data, read data files in Jupyter Notebook and then create visualizations of the data. We have an introduction to multiple Python libraries for data manipulation and visualization/plotting, e.g., pandas, matplotlib, and seaborn.

Assessment and Evaluation

Your final assessment will be calculated based on your performance in the following learning activities:

- Weekly Assignments-- programming exercises: you should submit your assignments through Canvas, they are due every Tuesday at midnight (**40%** of your final grade)

    Note: Assignment 1 will NOT be counted towards your final grade.

- In-class quizzes-- review of the assigned reading chapter for that week: you need to earn 80% or higher in every quiz to receive full points for quizzes (**30%** of your final grade). Please see two examples below of how the quiz points are calculated:

Quiz	Grade	Earning Point
Quiz 1	75%	0
Quiz 2	90%	1
Quiz 3	80%	1
Quiz 4	60%	0
Quiz 5	85%	1
Quiz 6	100%	1
Quiz 7	92%	1

Example 1

Quiz	Grade	Earning Point
Quiz 1	80%	1
Quiz 2	100%	1
Quiz 3	86%	1
Quiz 4	90%	1
Quiz 5	81%	1
Quiz 6	96%	1
Quiz 7	100%	1

Example 2

The student in example 1 earned 5 points out of 7 points. They earned 21% from the quizzes in their final grade. The student in Example 2 earned 7 points out of 7 and they received 30% from the quizzes in their final grade (the maximum possible earning points for the quizzes).

- Final group project (group of 2-3): you work together on a Python program that brought together all of the programming concepts covered in the course. The final project was iterative in nature. You submitted a one-page proposal before starting your project to get feedback on your proposed project ideas. The purpose of the final project was to create a real-world experience of a programming project and assimilated all the topics taught in this course. You require to submit a project

proposal in Week 8. The final project is due the last week of the term. You will present your project (brief explanations of features and a demo of your application) to the class in the final session. (**30%** of your final grade).

You should create your group by Week 5.

Resources

The electronic version of the book has open access. I will publish each chapter that you should read that week on Canvas. Please check Canvas Modules for the lecture notes, book chapters, and assignment instructions.

- Python for Everbody: Exploring Data in Python3
- Python for Data Analysis by Wes McKinney (O'Reilly). Copyright 2017 Wes McKinney, 978-1-491-95766-0.

Acknowledgments

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land is Conditional Execution situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.