Boston University Metropolitan College

Information Structures with Python

CS 521 A1
Fall 2024, PSY B53
Monday 6:00 pm – 8:45 pm

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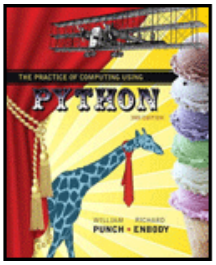
Course Description

This course presents an effective approach to learn Python. With extensive use of graphical illustrations, it will build understanding of Python and its capabilities by learning through examples and analogies. These examples will derive from real word applications to enhance critical thinking skills. The class will involve active student participation, discussions, and programming exercises. This approach will help build a strong foundation in Python programming that can be used effectively in real-job situations and will provide a foundation for future courses. Prerequisite: Programming experience in any language, or Instructor's consent.

Books

The Practice of Computing Using Python, 3rd Edition
by William Punch and Richard Enbody
Publisher: Pearson
ISBN10: 0134379764
ISBN13: 9780134379760



This book can be purchased from Barnes and Noble at Boston University.

Courseware

The course Web page is hosted on Blackboard Learn
https://learn.bu.edu/ultra/courses/_146377_1/cl/outline
The class notes, homework assignments, quizzes, and additional announcements will be posted here.

Class Policies

1) **Attendance & Absences** – Class attendance is required. Individual student is responsible for all scheduling and other announcements made in class. The likelihood of failing the course is subsequently increased if one fails to attend class regularly. The format of this course will be lectures, which will include working through sample problems. Certain course material will only appear during lectures, and most announcements will only be made in class.
2) **Assignments, quizzes, and project** – Blackboard Learn will be used for assignments, quizzes and project submission.
   It is important to practice with more coding when learning a programming language. There will be 6 assignments. Most assignments will consist of programming problems. Each assignment is due on the specified due date. 10% of the full score will be deducted from the assignment grade for each day that it is late. The submission will not be accepted after 7 days after the due date, and grade of 0 will be assigned.
   There will be 6 quizzes, which will be conducted online via Blackboard Learn. You will have 5 days windows to take each of the quizzes. But each quiz must be completed in 60 minutes. All quizzes are closed book test. You are not allowed to use any Python interpreter, either.
   There will be 1 course project, which is open ended, and the topic can be chosen by students. In this project, students will frame and solve problems using quantitative capabilities of Python. Students will present their projects in the final week of the course.
3) **Academic Conduct Code** – Cheating and plagiarism will not be tolerated. They will result in no credit for the assignment or examination and may lead to disciplinary actions. Please take the time to review the Student Academic Conduct Code: https://www.bu.edu/academics/policies/academic-conduct-code/

   NOTE: [This should not be understood as a discouragement for discussing the material or your approach to a problem with other students in the class. On the contrary – you may share your thoughts, questions and solutions. Naturally, if you choose to work in a group, you will be expected to come up with more than one and highly original solutions rather than the same mistakes.]

Grading Criteria

Attendance	5%
Assignments	35%
Quizzes	15%
Project	20%
Final Exam	25%

Class Meetings, Lectures & Assignments

Lectures, Readings, and Assignments subject to change, and will be announced in class as applicable within a reasonable time frame.

Date	Topic	Reading	Due
09/09 09/16	Introduction to computing and problem solving, Python programming environment, Python IDEs, modules, input/output, running Python, core data types, simple expressions.	Chapter 1, Appendix A	09/22 Assignment 1 Quiz 1
09/23 09/30	Variables, expressions, operators and Boolean expressions, control flows, iterations.	Chapter 2, 3	10/06 Assignment 2 Quiz 2
10/07 10/15	Mutability, name binding, strings, file processing	Chapter 4, 6	10/20 Assignment 3 Quiz 3
10/21 10/28	Collections, set membership and comprehension, lists, tuples, sets, dictionaries, searching and sorting.	Chapter 7, 9	11/04 Assignment 4 Quiz 4
11/04 11/11	Advanced data structures, functions, parameter passing, exception handling.	Chapter 5, 8	11/17 Assignment 5 Quiz 5
11/18 11/25	Objects and classes, attributes, methods, data encapsulation, Abstract classes, inheritance and polymorphism	Chapter 11, 12, 13	12/01 Assignment 6 Quiz 6
12/02	Recursion, iterator and generator	Chapter 15	

12/09	Project presentation		12/10 Project
12/16	**Final Exam**		

Programming Environment

We will be mostly using IDLE (which comes with Python installation) and Sypder for demo in class. Although, you may choose to use any other IDE (Integrated Development Environment), such as, Visual Studio Code, PyCharm and etc. We have Spyder IDE and Anaconda Python Distribution installed in our virtual lab. You may access the MET VLab from https://www.bu.edu/metit/services/client-technology/virtual-lab/.

Additional Resources

- http://www.pythontutor.com/visualize.html
  This website is very useful and allows to run simple Python programs and visualize the execution.
- https://docs.python.org/3/tutorial
  The official Python tutorial
- https://www.tutorialspoint.com/python
  A detailed tutorial with many simple examples
- https://www.learnpython.org
  A free, interactive tutorial
- https://www.python.org/community/sigs/current/edu-sig/
  Contains links to learning resources, including two free books