Boston University Metropolitan College

NOTE: The template below lists the minimum requirements for all syllabi at Metropolitan College. Instructors may add to this as their course and instruction styles require. Please discuss with your department chair any department-specific requirements, as well as questions you may have regarding writing your syllabus.

ALL SYLLABI MUST BE SUBMITTED EACH SEMESTER TO THE DEAN'S OFFICE IN ADDITION TO THE DEPARTMENTS.

Information Structures with Python

CS521 C1
On Campus

George Ultrino
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Office hours: by appointment

Course Description

This course covers the concepts of the object-oriented approach to software design and development using the Python programming language. It includes a detailed discussion of programming concepts starting with the fundamentals of data types, control structures, methods, classes, strings, and proceeding to advanced topics such as inheritance and polymorphism, creating user interfaces, exceptions, multi-threading and time complexity. Upon completion of this course students will be capable of applying software engineering principles to design and implement Python applications that can be used in conjunction with analytics and big data.

Books

REQUIRED

Boston University Metropolitan College

Summerfield, M. (2009). ***Programming in Python 3: A Complete Introduction to the Python Language*** **(2nd ed.).**

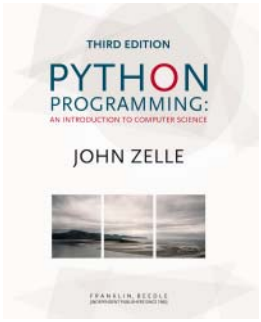
Addison-Wesley Professional.

ISBN-13: 978-0321680563

ISBN-10: 0321680561

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

RECOMMENDED – For students with little to no programming experience, please read through this text prior to class.



Zelle, J. M. (2010). ***Python programming: An introduction to computer science*** **(3rd ed.).**

Wilsonville, OR: Franklin, Beedle & Associates.

ISBN-13: 978-1590282755

ISBN-10: 1590282752

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

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Courseware
Not Available Yet

Class Policies

1) **Attendance & Absences** – Class will be on campus Wednesday nights from 6-8:45 PM. You are expected to attend as we will be doing in class programming exercises, as a class. In the event that you must miss a class, please let me know as soon as possible. There will be supplementary material available online.
2) **Assignment Completion & Late Work** – Due dates will be indicated for each assignment in the assignments section of the course and in the Study Guide. If, for any reason, you are unable to meet any assignment deadline, contact myself. All times mentioned in the course (unless otherwise specified) are in Eastern Time. All assignments must be turned in by their due dates and due times. 10 points will be deducted from your grade, for each late day, up to 48 hours past the due date. After 48 hours, a grade of 0 will be assessed. Extensions may be granted for extenuating circumstances, if approved PRIOR to the due date. Contact your facilitator. Too busy, difficult assignments etc. are NOT considered extenuating circumstances.
3) **Policy on getting stuck –** There may be times where you get "stuck" on a particular part of an assignment. In these instances, which do happen but are rare, you will be expected to turn in the portion of the assignment you completed, on time. You can then continue working on the portion you are "stuck" on. In order to do this, please see me individually. There will be a deduction when you submit the "stuck" potion, but the goal is learning. Do not abuse this policy, it is reserved for individuals that are struggling, not permission to turn in late.
4) **Academic Conduct Code** – "Cheating and plagiarism will not be tolerated in any Metropolitan College course. 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:

http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html.

NOTE: [This should not be understood as a discouragement for discussing the material or your particular approach to a problem with other students in the class. On the contrary – you should share your thoughts and questions in the discussion boards online. Please do not post solutions to the discussion boards. Each student is expected to submit their own work.]

Grading Criteria

Overall Grading Percentages	
Assignments 1-3	15%
Quizzes 1-6	20%
Project 1-3	35%
Final Exam	30%
Class Contributions	Up to 5% extra credit

Letter Grade	Approximate Percentage Grade Range	When To Give
A	95-100	The student's submission is excellent and without defect. The submission demonstrates mastery of the material.
A-	90-94.9	The student's submission is excellent with some minor defects. The submission demonstrates a solid grasp of the material.
B+	85-89.9	The student's submission is good with a few defects. The submission demonstrates a solid grasp of most but not all of the material.

B	80-84.9	The student's submission is above average with some defects. The submission demonstrates a solid grasp of some aspects of the material.
B-	75-79.9	The student's submission is approaching average. The submission demonstrates a grasp and understanding of some aspects of the material.
C+	70-74.9	The student's submission is average and has some moderate defects. The submission demonstrates a minimal grasp and understanding of the material.
C	65-69.9	The student's submission is average and has some major defects. The submission demonstrates a basic understanding of the material but nothing more.

C-	60-64.9	The student's submission is below average and has some major defects. The submission demonstrates a barebones understanding of the material but nothing more.
D	50-59.9	The student's submission is poor. Sections may be missing from the submission. The submission does not demonstrate an understanding of the material at even a basic level.
F	0-49.9	The student's submission is unacceptable. Sections may be missing from the submission. The submission does not demonstrate an understanding of the material in any fashion.

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

PRIOR TO CLASS – FOR THOSE WITH NO PRIOR PROGRAMMING EXPERIENCE – PLEASE PERUSE THE ZELLE TEXT. THIS WILL HELP TO PREPARE YOU FOR THIS CLASS.

THE FOLLOWING TABLE IS SUBJECT TO CHANGE. THERE WILL BE EXERCISES, CODE WALK-THROUGHS AND QUESTIONS IN CLASS, WHICH MAY CHANGE THE CURRICULUM SLIGHTLY.

Date	Topic	Readings Due	Assignments Due
September 06	Basics of Procedural Programming in Python; Setup Python; Basic I/O; Data Types; Sequence Types; Assignment 1 Overview	Summerfield: Chapter 1; Chapter 2; Chapter 3 pages 107-120	n/a
September 13	Set types(Basics); Mapping Types; Iterators and iterable operations; Deep and shallow copy; Control and structures;	Summerfield: Chapter 3 pages 120-158; Chapter 4 pages 159-167	Quiz 1 Due – September 16
September 20	Functions; Argument passing; Argument parsing and unpacking; Lambdas; Nested Functions; Global Scope; Assertions; Assignment 2 overview	Summerfield: Chapter 4 pages 171-192;	Assignment 1 Due
September 27	Assignment 1 Student Solution Walk-Through; File I/O; File, Directory and Process Handling; Modules and Packages; Modularization; Import/from import	Summerfield: Chapter 5; Chapter 7 pages 305-310	Quiz 2 Due – September 30
October 4	Scope; Namespace; OOP Approach; OOP Concepts and Terminology; Custom Classes; Attributes and	Summerfield Chapter 6 pages 233-245; http://python-textbok.readthedocs.io/en/1.0/Object_Oriented_Programming.html;	Assignment 2 Due

	Methods; Assignment 3 overview		
October 11	Assignment 2 Student Solution Walk-through; Magic Methods; Abstract Classes; MRO; Multiple Inheritance; Composition; Mixins	http://python-textbok.readthedocs.io/en/1.0/Object_Oriented_Programming.html; Summerfield: Chapter 8 pages 388-389; http://www.python-course.eu/python3_multiple_inheritance.php	Quiz 3 Due – October 14
October 18	Custom Exceptions; Raise Exceptions; Default Dictionaries; Order Dictionaries; Named Tuples; Frozen Sets; Project Overview	Summerfield: Chapter 4 pages 167-171; Chapter 3 pages 111-113;125;135-138	Assignment 3 Due
October 25	Comprehensions; map; filter	Summerfield: Chapter 3 pages 118-120; 125; 134-135; Chapter 8 pages 395-398	Quiz 4 Due – October 28
November 1	Linked Lists; Deques; Stacks	http://interactivepython.org/runestone/static/pythonds/BasicDS ImplementinganUnorderedListLinkedLists.html https://docs.python.org/3/library/collections.html#collections.deque	
November 8	Project Student Solution Walk-Through; Database Creation, Storage and Retrieval using Python	Summerfield: Chapter 12 pages 480-487	Project Part 1 Due
November 15	Project Part 2 Overview; Intro to Big(O) Notation; Time Complexity; Queues	ps://chrisalbon.com/python/big-o_notation.html https://wiki.python.org/moin/TimeComplexity https://www.ics.uci.edu/~pattis/ICS-33/lectures/complexitypython.txt https://docs.python.org/3/library/queue.html	Quiz 5 Due – November 18
November 22	Multi-Threading; Multi-Processing	Summerfield: pages 439-454 https://docs.python.org/3/library/threading.html	Project Part 2 Due
November 29	Project Part 2 Student Solution Review; TBD		Quiz 6 Due – December 6
December 6	TBD		Project Part 3 Due
December 13	Online Office Hours 8-9PM		

December 16-21	FINAL EXAM		