**BRONX COMMUNITY COLLEGE of the City University of New York**

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**SYLLABUS:** CSI 31 Introduction to Computer Programming I. 3 credits/4 hours.

**PREREQUISITE:** CSI 30 CSI 30; and CUNY English Proficiency, or ENG 100 or 110, if required

**COREQUISITE:** MTH 31.

**TEXT:** *Object-Oriented Programming in Python, 1-st Edition*, by Goldwasser and Letscher, 2008.
**Reference for UML:** Provided by Instructor.

**Reference for TKInter (optional):** Provided by Instructor.

**Content:** Introduction to computer systems and computer logic; techniques of structured programming; data representation; basic algorithm design and implementation in a modern structured language; computer solutions to problems taken from engineering, science, physics, mathematics, business, and other applications.

**Objectives:** By the end of this course the successful student will be able to work in the Python language to:

1. Use it comfortably as an Object-Oriented language;
2. To regard every variable as an object of some class, and to review the built-in types from this perspective;
3. USE OOD/OOP to design correctly and to implement web applications and event-driven GUI applications.

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| **Day** | **Section** | **Topic** | **Assignments** | **Projects** |
| 1 | 1.1-1.2 | Data and Types; Functions and Algorithms (UML activity diagram, i.e. flow chart) | pg. 29: 1.5.16,1.10 |  |
| 2 | 1.3-1.5 | Higher Level Languages; Objects and Classes: OO Design (UML class diagram, UML sequence diagram) | pg. 29: 1.15, 1.19, 1.22,1.25, 1.29, 1.31 |  |
| 3 | 2.2-2.5 | Built-in Python classes (list, str) and numeric types (int, long, float) | pg. 82-84: 2.5, 2.8, 2.9,2.14, 2.18, 2.24(a-g) | pg. 86: 2.33 |
| 4 | 2.6-2.8 | Expressions, Calling Functions | pg. 84: 2.24(j-r), 2.25,2.27 (a-r) |  |
| 5 | 4.1, 4.4 | Lists and Conditional statements for-loops | pg. 151-155: 4.5, 4.9, 4.13, 4,23, 4.27 |  |
| 6 | 4.5 | For loops | pg. 155: 4.34 | pg. 156: 4.39 |
| 7 |  | **Exam 1** |  |  |
| 8 | 5.1, 5.4 | While loops, defining functions | pg. 195-199: 5.4, 5.5, 5.23 |  |
| 9 | 6.4 | Designing and implementing classes – aFraction class | pg. 233: 6.10 | pg. 233: 6.18 (or complex numbers) |
| 10 | 5.5 | Error checking and exceptions | pg. 200: 5.33, 5.34 |  |
| 11 | 7.2, 7.4-7.6 | Design and Documentation | pg. 268: 7.4, 7.6, 7.8 |  |
| 12 | 7.7 | Modules and Unit Testing | pg. 269: 7.6, 7.8 |  |
| 13 | 8.1-8.5 | Input and Output; Files | pg. 293: 8.5, 8.13 | pg. 296: 8.21-8.24 |
| 14 |  | **Exam 2** |  |  |
| 15 | 3.1-3.3 | Graphics (optional TKInter) | pg. 121: 3.5 | pg.123: 3.17 |
| **Day** | **Section** | **Topic** | **Assignments** | **Projects** |
| 16 | 9.1-9.4 | Inheritance | pg. 328: 9.3, 9.6 |  |
| 17 | 4.3, 11.1 | Structural recursion – Drawing a pyramid | pg. 151: 4.7, 4.10, pg.390: 11.4 |  |
| 18 | 11.3, 11.4 | Procedural recursion – Binary search | pg. 391: 11.6, pg. 395: 11.31 |  |
| 19 | 12.1, 12.2 | Container Classes (list vs. tuple; Dictionary) | pg. 433: 12.5 | pg. 434: 12.14 |
| 20 |  | **Exam 3** |  |  |
| 21 | 15.1 | Event-driven programming (UML state diagram) | pg. 519: 15.1, 15.2 |  |
| 22 | 15.2-15.4 | Event-handling | pg. 520: 15.6 | pg. 520: 15.12 (or other GUIProject) |
| 23 | 16.1-16.2 | **(Optional topic)** A Network Primer,Basic Client | Modify fig.16.5 |  |
| 24 | 16.3 | **(Optional topic)** Basic Server | pg. 556: 16.1 |  |
| 25 | 16.4 | **(Optional topic)** A Chat Room |  | One of pg. 557:16.8-16.12 |
| 26 |  | Review |  |  |
| 27 |  | Review |  |  |
| 28 |  | Review |  |  |

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abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of a disability, please contact the disAbility Services Office as soon as possible this semester. The disAbility Services specialists will meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations for this course. You can reach the disAbility Services Office at: disability.services@bcc.cuny.edu, Loew Hall, Room 211, (718) 289-5874.

GJL/Spring 2020
EA Fall 2022 prereq update