**BRONX COMMUNITY COLLEGE**
**of the City University of New York**
**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**SYLLABUS:** CSI 32 Introduction to Computer Programming II.          3 credits/4 hours.

**PREREQUISITE:** CSI 31; and CUNY English Proficiency, or ENG 100 or 110, if required

**TEXT:** *C++ How to Program, Tenth Edition*, by P. Deitel and H. Deitel, 2017.

**Content:** Continuation of CSI 31, Introduction to object-oriented programming including encapsulation, polymorphism and inheritance; class templates; recursion and recursive analysis; analysis of algorithms; program style; documentation of programs; debugging; development of major projects.

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

(1) Program with the object-oriented concepts classes, objects, data members, member functions and create classes; (2) Use pointers and built-in arrays;
(3) Access class members and learn the order of constructor and destructor
calls; (4) Use operator overloading;
(5)  Understand polymorphism, inheritance, use constructors and destructors in inheritance hierarchies;
(6)  Use C++ object-oriented stream input/output operations;
(7)  Build C++ programs that create, update and process data files;
(8)  Understand Exception Handling, use try, catch and throw;
(9)  Program with Linked lists;
(10) Implement various sorting algorithms; (11) Be familiar with C Legacy topics.

| Day | Section | Topic | Suggested Homework |
|---|---|---|---|
| 1 | 1.6-1.15, 2.1-2.8 | Introduction to C++ Programming, Input/Output and Operators | 2.20, 2.24, 2.25, 2.26, 2.28 |
| 2 | 4.1-4.9, 5.1-5.8 | Algorithm Development, Control Statements | 4.11, 4.17, 4.28, 5.14, 5.17, 5.30 |
| 3 | 6.1-6.15 | Functions | 6.17, 6.18, 6.23, 6.28, 6.29 |
| 4 | 6.16-6.21, 7.1-7.11 | Recursion, Array and Vector, Catching Exceptions | 6.34, 6.41, 7.21, 7.24, 7.32 |
| 5 | 8.1-8.12 | Pointers | 8.8, 8.12 |
| 6 | 3.1-3.7 | Introduction to Classes, Objects, Member Functions and Strings | 3.10, 3.11, 3.12 |
| 7 | | **Exam 1** | |
| 8 | 9.1-9.7 | Classes: A Deeper Look 1 | 9.6, 9.11, 9.12, 9.13 |
| 9 | 9.8-9.16 | Classes: A Deeper Look 2 | 9.19, 9.24, 9.25 |
| 10 | 10.1-10.4 | Operator Overloading 1 | 10.8, 10.9 |
| 11 | 10.5-10.8 | Operator Overloading 2 | 10.10, 10.12 |
| 12 | 11.1-11.3 | Object-Oriented Programming: Inheritance 1 | 11.6 |
| 13 | 11.4-11.6, 23.7 | Object-Oriented Programming: Inheritance 2, Multiple Inheritance | 11.7, 11.8 |
| 14 | | **Exam 2** | |

| Day | Section | Topic | Suggested Homework |
|-----|---------|-------|--------------------|
| 15 | 12.1-12.4 | Object-Oriented Programming: Polymorphism | 12.12 |
| 16 | 13.1-13.5 | Stream Input/Output: A Deeper Look 1 | 13.6, 13.8, 13.12 |
| 17 | 13.6-13.10 | Stream Input/Output: A Deeper Look 2 | 13.15, 13.16, 13.17 |
| 18 | 14.1-14.5 | File Processing 1 | 14.3, 14.5, 14.6 |
| 19 | 14.6-14.15 | File Processing 2 | 14.10 |
| 20 | 17.1-17.5 | Exception Handling: A Deeper Look 1 | 17.22, 17.23 |
| 21 | 17.6-17.11 | Exception Handling: A Deeper Look 2 | 17.24, 17.28, 17.29 |
| 22 | | **Exam 3** | |
| 23 | 19.1-19.3 | Linked Lists | 19.6, 19.7, 19.8, 19.9 |
| 24 | 20.1-20.2 | Linear Search, Binary Search | 20.8, 20.9 |
| 25 | 20.3 | Sorting Algorithms | 20.5 |
| 26 | 23.4, Appendix F | Namespaces, C Legacy Code Topics | 23.4, 23.5, F.2, F.3, F.7 |
| 27 | | Review | |
| 28 | | Review | |

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**Accommodations/Disabilities** Bronx Community College respects and welcomes students of all backgrounds and 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.

**If you test positive for COVID while taking an in-person/hybrid course:**
- Using your BCC email account, please email all your **in-person and/or hybrid** professors of your status.
  - Please include your emplid # and current phone number in your email.
  - Please also email us at healthservices@bcc.cuny.edu .
  - Your professor will work with you to complete class work while you are in quarantine.
- You will be called by a Health Services staffer.  It is critical that you connect in a timely matter with this staff member for contact tracing information.
- You will need to submit a negative COVID test to Health Services (healthservices@bcc.cuny.edu) before you are allowed access to the campus.
- Your negative test result must come from your doctor or a medical provider (e.g. CityMD, Urgent Care, etc.).  We will **not** accept a negative home test result.