**Boston University** Metropolitan College



# Programming with C++

MET CS 231
Course Format – On Campus
Mondays 6:00 PM – 8:45 PM
Fall 2017

**Instructor:** Mehrdad (Mike) Nourai
**Email:** mnourai@bu.edu
**Office hours:** after class

**Course Description**
Covers the elements of object-oriented programming and the C++ language. Data types, control structures, functions, library functions, classes, inheritance, and multiple inheritance. Use of constructors, destructors, function and operator overloading, reference parameters and default values, friend functions, input and output streams, templates, and exceptions. Laboratory course.  4 credits.

**Prerequisites:**
MET CS 201 or instructor's consent.

**Text Book**
Problem Solving with C++ 10th Edition, Savitch - Pearson

**Courseware**
Blackboard website:  https://learn.bu.edu/

**Class Policies**
1) **Attendance & Absences** – Attendance is expected at all class meetings and is part of your class participation grade. You are responsible for ALL the materials covered and discussed in class. Coming to class late, leaving early, or being absent would result in missing important topics that were covered and discussed in class which negatively affects your final grade.
2) **Assignment Completion & Late Work** – No late coursework would be accepted. Any late or missed assignment would be recorded as zero. Exceptions may be made in the case of an illness or an emergency condition but only when a verifiable documentation is submitted within a reasonable timeframe. All assignments must be submitted electronically via the class Blackboard website on or before the published due date. No paper, e-mail, or any other submission types would be accepted. It is students' responsibility to make sure all assignments submissions are successful and make backups of work submitted.
3) **Quizzes and Exams** – No makeup quizzes or exams would be given. Any missed quizzes or exams would be recorded as zero. Exceptions may be made in the case of an illness or an emergency condition but only when a verifiable documentation is submitted within a

reasonable timeframe. No electronic or computer devices such as Smartwatch, Smartphone, Tablet, laptop, or netbook (calculator is OK) can be used during quizzes and exams. Violations results in no credit for the exams, see Academic Conduct Code.

4) **Classroom Expectations** – Please do: respect your classmates by silencing your cell phone or other electronic devices before class begins, and don't use them during class; participate, ask questions, and interact with your professor.

5) **Academic Conduct Code** – An important message from the Dean's Office: "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. 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, 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."

**Objectives**

To gain an understanding of the Object-Oriented paradigm, and of the "class" syntax of the generalized Object-Oriented programming language C++. Upon completion of this course the student is expected to be able to use the C++ language to design and write Object-Oriented computer programs to solve a selection of quantifiable problems.

**Course Requirements**

- Class participation
- Reading and studying
- Assignments (Homework, Labs, and Projects)
- Exams

**Additional Course Policy**

- Not all of the materials in each chapter will be covered during lecture/discussion, but all the materials listed in each chapter should be read.
- Additional reading materials may be assigned for each topic. Students are responsible for all the materials covered including any topics not in the textbooks.
- It is student's responsibility to participate in class, submit all the coursework successfully on the Blackboard by their due dates, and take quizzes and exams on their scheduled dates.
- Only ONE submission per assignment would be accepted.
- An incomplete grade is rarely given, and would only be considered if at least 85% of the course has been completed, AND compelling documented circumstances, AND request for an incomplete are submitted BEFORE the Final Exam.
- All coursework must be done in C++.

**Grading Criteria**

The grade that a student receives in this class will be based on several components and is breakdown as shown below. All percentages are approximate and the instructor reserves the right to make necessary changes.

| | |
|---|---|
| Class Participation | 5% |
| Homework/Labs | 5% |
| Projects | 20% |
| Mid-term Exam | 35% |
| Final Exam | 35% |
| Total | 100% |

**Programming evaluation Criteria**

Programs will be graded roughly as follows (all percentages are approximate and the instructor reserves the right to make necessary changes):

- 60% execution correctness (e.g. output is correct and is consistent with the guidelines)
- 10% structure (e.g., modularization, information hiding, etc.)
- 10% insightful programming (e.g., developing reusable class components, etc.)
- 10% consistent style (e.g., capitalization, indenting, etc.)
- 10% appropriate commenting style

Programs submitted after the deadline would be assigned grade zero (0%).

**Letter grade/numerical grade conversion is shown below:**

A (95-100)  A- (90-94)
B+ (85-89)  B (80-84)  B- (75-79)
C+ (70-74)  C (65-69)  C- (60-64)
D (50-59)
F (< 50)

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**Class Meetings, Lectures & Assignments:**
*Note: This is a tentative schedule and a live document. Lectures, Readings, and Assignments subject to change, and will be announced in class as applicable within a reasonable time frame.*

| Date | Topic | Readings Due | Assignments Due |
|---|---|---|---|
| September 11 | Introduction to the Syllabus<br>Intro to C++ Programming<br>Intro to C++ Basics | Chapters 1,2 | |
| September 18 | Flow of Control, Functions | Chapters 3,4 | Lab |
| September 25 | Functions for All Subtasks,<br>I/O Streams | Chapters 5,6 | Lab |
| October 2 | I/O Streams , Arrays | Chapters 6,7 | Lab |
| October 9 | **Columbus Day Holiday, classes suspended** | | |
| October 16 | Strings and Vectors | Chapter 8 | Lab<br>Project 1 - Due |
| October 23 | Pointers and Dynamic Arrays | Chapter 9 | Lab |
| October 30 | Midterm Exam | | **Exam (Chapters 1 - 9)** |
| November 6 | Defining Classes Friends,<br>Overloaded Operators, and Arrays | Chapters 10,11 | Lab |
| November 13 | Arrays, Separate Compilation,<br>Linking, and Namespaces | Chapters 11,12 | Lab |
| November 20 | Pointers and Linked Lists | Chapter 13 | Lab<br>Project 2 - Due |
| November 27 | Recursion, Inheritance | Chapters 14,15 | Lab |
| December 4 | Inheritance , Exception Handling | Chapters 15,16 | Lab |
| December 11 | Templates,<br>Standard Template Library | Chapters 17,18 | Project 3 - Due |
| December 18 "Tentative" | Final Exam | | **All Covered Material** |