

**BOSTON UNIVERSITY**  
**Metropolitan College**  
**MET CS 341 Data Structures with C++**  
**Course Syllabus Rev 1**

**Summer Term 2, 2017**

Tuesday and Thursday Evenings July 6 – Aug 10, 6:00-9:30PM

**Also Friday evening July 7**

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**Course Objectives:**

To gain an Object-Oriented understanding of Data Structures using the C++ Programming Language. Topics include data abstraction, encapsulation, information hiding, and recursion, also creation and manipulation of various data structures such as lists, stacks, queues, trees, hashing, graphs, and searching and sorting algorithms. Programming methods for accessing these structures are the heart of this course. Students are encouraged to assist in the enhancement and development of the course materials.

**Preliminary Expectations:**

All students have successfully completed MET CS 231 or the equivalent in an academic environment. Homework assignments are to be completed on a system which supports Windows-2000, -NT or -XP or Windows-7 or Windows-10 or a UNIX or linux-based system or a MacOS system, which supports the ANSI-2000 Standard version of C++ or higher. Also, all students are expected to be acquainted with the usage of a full-capability IDE such as MS Visual Studio, Oracle NetBeans, IBM Eclipse or MacOS XCODE. Please note that transportability across platforms is a catalogue requirement of this course.

**Academic Integrity:**

All rules and regulations of Boston University and of Metropolitan College regarding academic integrity apply to this course. The use of study groups is encouraged. However, all work presented for course credit must be the work of the submitter unless attributed as follows. If you use the work of someone else, please give credit for it in your comments.

**Gradables:**

Midterm Exam: 25%, Final Exam 25%, Assigned Homework Problems: 50% (10% each). The Midterm Exam will be a **take-home exam as specified in the attached course calendar**. The Final Exam will be an **in-class exam as specified in the course calendar**. **There will be five homework/lab assignments, for which the due dates are also specified in the course calendar**. The problem statements for these assignments will be provided by the Professor. **Completed source programs for the homeworks and the Midterm will be emailed to the Professor at [maslanka@bu.edu](mailto:maslanka@bu.edu)**. They should be emailed prior to 6:00PM on the due dates listed in the course calendar. Source code for solutions of the problems on the Final Exam will be emailed to the professor at the end of the final exam session.

**Textbook and Blackboard:**

- **DATA STRUCTURES & Other Objects Using C++, 4<sup>th</sup> edition**, by Michael Main and Walter Savitch, Pearson Addison-Wesley, 2011, ISBN13: 978-0-13-212948-0. Available as an eTextbook at [coursesmart.com](http://coursesmart.com).
- **Online Blackboard** will be used to provide additional course materials.

**References:**

- **Introduction to Programming in C++**, edition 1, by John Maslanka, publisher Kendall-Hunt, 2009, ISBN13: 978-0-75475-6465-7.
- **C++ How To Program**, 11th edition, by Harvey and Paul Deitel

Dr. Maslanka is a professional writer of computer language compilers and run-time systems. He is retired from Hewlett Packard Company/Compaq Computer Corporation/ Digital Equipment Corporation, having worked in their Marlboro, MA, and Nashua, NH, facilities from 1975 to 1984 and from 1991 until his retirement in 2002. He has also been Adjunct Faculty in the BU MET College Computer Science Department since 1973.

Dates	Topics	Read in Text
July 6	Course Introduction, Overview of Course Topics; Review C++ classes; Review of C++ keyboard IO and text file IO Homework 1 Statement available.	Ch 1, Appendixes A – L Materials on Blackboard
July 7	Pointers and Dynamic Arrays, Recursion, Inheritance, Aggregation and Abstract Data Types	Ch 2, 4, 9, 14 Materials on Blackboard
July 11	Sorting Algorithms <b>Homework 1 due in email at 6:00 PM</b> Homework 2 Statement available.	Ch 12, 13
July 13	Container classes, Linked Lists	Ch 3, 5
July 18	Singly Linked Lists and Stacks <b>Homework 2 due in email at 6:00 PM</b> Homework 3 Statement available.	Ch 5, 7
July 20	Doubly Linked Lists and Queues, Hashing Procedures <b>Midterm Exam take-home distributed.</b>	Ch 5, 8
July 25	Templates, Iterators, C++ Standard Template Library <b>Homework 3 due in email at 6:00 PM</b> Homework 4 Statement available.	Ch 6
July 27	Trees, especially Binary Trees <b>Midterm Exam due in email at 6:00 PM</b>	Ch 10, 11
Aug 1	More Binary Trees – AVL Balancing, Removals <b>Homework 4 due in email at 6:00 PM</b> Homework 5 Statement available.	Ch 10, 11
Aug 3	Introduction to Graphs	Ch 15
Aug 8	More Graphs Review for Final Exam <b>Homework 5 due in email at 6:00 PM</b>	Ch 15
Aug 10	<b>Final Exam in class 6:15 – 8:15PM</b>	

All previous course work is ultimately due by 6:00PM on the night of the final exam. I cannot promise to grade any previous papers which are due before that date and which are received after that time. The time which I have available for producing final course grades is very brief. My grades are due to the BU Registrar by 5:00PM on Aug 12.