EC330 – Applied Algorithms and Data Structures for Engineers
Spring 2016
T Th 10am-noon in PHO 211

Staff Information
Instructor:
Tali Moreshet, PHO 528   Email: talim@bu.edu (with EC330 in the subject line)
Office hours: M 12:30-1:30, Th 2-4, and by appointment

Graduate Teaching Assistants:
Emre Ates, ates@bu.edu
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Julian Trin, julest@bu.edu
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Office hours for assistants, in PHO305/307, will be posted on the course webpage.

Course Description
A good understanding of algorithms is essential to most engineering tasks today. Correct implementations of algorithms have allowed the Internet to grow unbounded, computer games to function in real time, and databases to be accessed quickly (and incorrect implementations have done the opposite!). We will begin the course with a serious introduction to algorithmic analysis, followed by a treatment of simple data structures and sorting algorithms. We will continue with more sophisticated data structures and graph algorithms, and end with advanced data structures as time permits. Throughout the course we will discuss the many applications of the data structures and algorithms considered, and homework will focus on theory as well as C++ implementations. EC327 and MA193 are the prerequisites for this class.

Textbook
• Cormen, Leiserson, Rivest, and Stein, Introduction to Algorithms (3rd Edition), MIT press, 2009: This is the most complete reference for data structures and algorithms currently in use, and it is found on the bookshelves of many professional engineers.

Optional Reference Texts
• Mark Allen Weiss, Data Structures & Algorithm Analysis in C++ (4th Edition), Prentice Hall, 2013: This is an alternate text used by other universities for this class. It is not nearly as comprehensive or deep as our textbook, but it is somewhat easier to understand and provides C++ code, not just pseudocode.
• Michael Goodrich, Roberto Tamassia, David Mount, Data Structures and Algorithms in C++ (2nd Edition), Wiley, 2011: This is another alternate text used by other universities for this class. It is not nearly as comprehensive or deep as our textbook, but it is somewhat easier to understand.

Online References
• cplusplus.com – The C++ resources network with lots of good syntax and library documentation.
Announcements, course material, readings, updated schedule, and other useful links will be posted on Blackboard (http://blackboard.bu.edu).

Labs
Homework assignments will be completed in C++. Unless otherwise stated, you may use any development environment you wish (e.g. Netbeans, Eclipse, XCode, Visual Studio), as long as it is fully ANSI C++ compatible. You should also make sure that your code runs on the lab computers. You can get a copy of Visual Studio.NET for your use in this class by signing in with your BU ID and password here: http://tinyurl.com/BU-ENG-Dreamspark. Our laboratory space is in PHO305/PHO307 (Linux machines with Windows VMs), although you can also use the eng-grid.bu.edu for running Linux applications. If you have registered for this class sufficiently early, your BU ID should get you access to PHO305/PHO307; if not, please submit your request through Zaius (http://www.bu.edu/dbin/eng/zaius/).

Grades
All grades will be curved according to the class median. Thus, it is your relative score (compared to the rest of the class) that really matters, rather than your objective score.

Evaluation
Grading:  
Exams: 60%  
Homework: 30%  
In-class and discussion section quizzes: 10%

Exams: There will be a midterms, during class time (tentative February 25), and a final. The policy on what you are allowed to bring to the exam will be announced later in the semester.

Homework: Homework assignments will be posted on the Blackboard website. Homeworks are due at the beginning of class, and must be turned in online on Blackboard. No late homework will be accepted, may not be turned in late, except for legitimate excuses with written, dated documentation. If your homework is not readable, it will not be graded.

Discussion sections: Discussion sections will meet on Fridays, 11am-noon or 12-1pm (both in EPC 209); you may attend either session. These sections will provide extra depth to the course, including homework tips and review of some topics. Some of the discussions will also have a short graded quiz.

Collaboration
We take cheating and plagiarism very seriously. You may use other textbooks, web sources, and/or up to ONE other classmate per homework, subject to the following strict conditions:  
1. You must clearly acknowledge all sources (including your collaborator) at the top of your work.  
2. You must write all answers in your own words, though C++ code may be shared with your collaborator.  
3. You must be able to fully explain your answers upon demand.

You may not collaborate in any way on exams or quizzes. Failure to meet any of the above conditions will be considered cheating in this class.