EC330 – Applied Algorithms and Data Structures for Engineers
Spring 2020

Lecture: PHO 211, Mon/Wed 4:30pm – 6:15pm
Discussion: Attend one of the following two sections
  EPC 208, Fri 11:15am – 12:05pm
  EPC 208, Fri 12:20pm – 1:10pm
Lab: PHO 305/307

Staff Information:
Instructor:
   Wenchao Li, PHO 336, wenchao@bu.edu (Write 'EC330-Spring2020:' in the subject line)
   Office hours: Mon 11:00am – 12:00pm, Wed 11:30am – 12:30pm
Graduate Teaching Assistant:
   Kacper Wardega, ktw@bu.edu
Undergraduate Teaching Assistants:
   Ayush Upneja, upneja@bu.edu
   Justin Hafling, jhafling@bu.edu
   William Pine, wpine@bu.edu
   Parker Van Roy, parkervr@bu.edu
Details about office hours with teaching assistants will be posted on Blackboard

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 (recommended) are the formal prerequisites for this class.

Textbook:
- Cormen, Leiserson, Rivest and Stein, *Introduction to Algorithms* (Third Edition), MIT Press, 2009.

Reference Texts:
- Dasgupta, Papadimitriou and Vazirani, *Algorithms* (First Edition), McGraw-Hill Education, 2006.
- Weiss, *Data Structures & Algorithm Analysis in C++* (Fourth Edition), Pearson, 2013.

- Myers, *Effective C++: 55 Specific Ways to Improve Your Programs and Designs* (Third Edition), Addison-Wesley Professional, 2005.

Online References:
- www.cplusplus.com

Discussion Sections:
The topics covered include review of course materials, additional examples, homework tips and peer code-review. Some of the discussions may have a short graded quiz.

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 make sure that your code runs on the lab computers in PHO 305/307. We will be grading your homework on the lab computers. *You will also use these computers on exams*.

Grading:
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. For a course at this level, I expect to center the median at a B/B-, but the final grade will depend on my assessment of the class as a whole.
- Homework (40%) – 8 in total
- Exam (52%) – one midterm (24%) and one final (28%)
- In-class quizzes (8%) – 4 in total

Homework:
Homework assignments will be posted on Blackboard and are *due at the beginning of class*. They must be turned in *online* on Blackboard. You will be given *one 'late day'* which you must use as a whole. This is intended to handle a contingency that you might have. If you want to use this 'late day', you must write it clearly at the beginning of your submission. Other than this 'late day', *no late homework will be accepted*, except for legitimate excuses backed by written and dated documentation. The top solution for each homework problem (as determined by the graders) will receive 0.1 point of extra credit.

Policy on Collaboration:
We take cheating and plagiarism very seriously. All homework assignments are supposed to be *individual assignments*. We will run code clone detectors on your code. You may use other textbooks and web sources, subject to the following *strict* conditions:
1. You must clearly acknowledge all sources at the top of your homework.
2. You must write all answers in your own words, and you *may not* share code with any of your classmate.
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.

Check Blackboard for announcements, readings, updated schedule, exam policy, etc.