**Description of Course:**

This course teaches the basic techniques to orgranize data in running programs. You will know about well-known data structures as listed in the Syllabus. You will be able to (1) implement these structures as classes in C++; (2) determine which structures are appropriate in various situations; (3) confidently learn new structures beyond what are presented in this class. You will also learn part of object-oriented programming and software development methodology.

**Course Outlines:**

* Pre-condition/Post-condition specifications
* Time analysis techniques
* Container classes
* Pointers and dynamic arrays
* Linked lists
* Templates and iterators
* Stacks
* Queues
* Recursive thinking
* Trees
* Sorting and searching techniques
* Graphs

**Instructor:**

Maryam Vatankhah

**Office:** NAC- 7/107

**Email:** mvatankhah@ccny.cuny.edu

**Office Hours:** TBD

**Preferred Textbook:** Data Structures and Other Objects Using C++, Third Edition, by Michael Main and Walter Savitch , ISBN 0-201-70297-5, Addison Wesley, softcover. Textbook can be found in CCNY bookstore.

Lots of good sample codes are found in C++ How to Program by Deitel & Deitel, 3rd Ed., Prentice Hall 2001, QA76.73.C153D45, ISBN 0-13-089571-7. This course involves some of C++ language details that could be found in this book.

**Prerequisites:** CSc102 (Introduction to Computing) and CSc104 (Discrete Mathematical Structure I). You should feel confident in your ability to design and implement simple programs using arrays and functions. As a rough guideline, all the materials before Chapter 5 (Pointers and Strings) of C++ How to Program by Dietel & Dietel are assumed to be understood. You should be familiar with some programming environment--either a PC or a Unix system.

**Grading:**

Class Participation/ /pop quizzes: 10%

Assignments 30%

Midterm Exam 20%

Final Exam: 40%

These percentages are *guidelines* for both the student and instructor and may be modified by the instructor to better reflect the circumstances of the course.

**Attendance:**

Class attendance is mandatory. Attendance will be taken at the beginning of each class. Please notify instructor in advance via e-mail or phone if you cannot attend class.

If there are class, assignment, or exam dates that conflict with athletic schedules or religious observance please inform the instructor during the first full week of class.

**Policies:** Students may discuss ideas together. But since each student get credits for his or her submissions, all actual program code and written answers must be done separately by each student, and must not be shared.

**Communications:** I would like the course to run smoothly and enjoyably. Feel free to let me know what you find good and interesting about the course. Let me know as soon as possible about the reverse. You may see me in my office during my hours or send me messages by e-mail.

**General Info:**

A student failing all of the exams and or not successfully completing the assignments cannot pass this course. Additionally, failing to complete homework by deadlines set by the instructor can and will cause a reduction to the individual’s final grade.