Title of Course: CSC 330 Data Structures I
Spring 2012

Lect hrs/Wk: 2
Lab hrs: 2
Credits: 3

Course Description

This course is an introduction to abstract data structures, their use and implementation. Storage allocation techniques, stacks, queues, linked structures, recursive programming and backtracking will be discussed. Students are expected to complete several programming assignments illustrating the basic concepts.

Prerequisites:

Basic skills- ENG 095; ESL 095; ACR 095; MAT 056; CSC 210 (Computer Programming II) and CSC 230 (Discrete Structures) or Departmental approval.

Learning Outcomes and Assessment

After completing this course, students will be able to:

- **Outcome:** Define abstract data types (ADTs) and their properties and implement them.
  **Assessment:** Short essay questions in exams, programming questions in exams and programming projects.
- **Outcome:** Use recursion for the solution of a problem.
  **Assessment:** Programming projects and exam questions.
- **Outcome:** Analyze the performance of algorithms and programs using “Big-O” analysis.
  **Assessment:** Exam questions.
- **Outcome:** Design, code, and test large programming projects using a variety of data structures.
  **Assessment:** Programming projects.
- **Outcome:** Analyze a problem and determine the appropriate data structure for the problem.
  **Assessment:** Exams questions and programming projects.

General Education Outcomes and Assessment

- **Quantitative Skills** – Students will use quantitative skills and concepts and methods of mathematics to solve problems
  **Assessment:** Use formulas and concepts of mathematics to solve problems in programming assignments
- **Information and Technology Literacy** – Students will collect, evaluate and interpret information and effectively use information technologies
  **Assessment:** Use a high-level computer programming language to create application software

Required Text & Readings

- **Textbook:** book to be announced
- **Author:** n/a
- **Publisher:** n/a
- **ISBN:** n/a

Other Resources

Flash drives are recommended.
Evaluation & Requirements of Students:

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<td>First Examination</td>
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<td>Second Examination</td>
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**College Attendance Policy**

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

**Academic Adjustments for Students with Disabilities**

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

**BMCC Policy on Plagiarism and Academic Integrity Statement**

Plagiarism is the presentation of someone else’s ideas, words or artistic, scientific, or technical work as one’s own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC’s web site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

**Outline of Topics**

1. SOFTWARE ENGINEERING PRINCIPLES
2. DATA DESIGN AND IMPLEMENTATION
3. SORTED AND UNSORTED LISTS USING ARRAYS AND LINKED STRUCTURES
6. RECURSION
7. STACKS USING ARRAYS AND LINKED STRUCTURES
8. QUEUES USING ARRAYS AND LINKED STRUCTURES
9. CIRCULAR AND DOUBLY LINKED LISTS