

CSCI-20 Advanced Programming Methods with Data Structures in C++
Lecture TR 3:00-4:15 PM in room 1906, lab TR 4:20-5:35 in room 3906A.

Spring 2012

Instructor: Keith Mehl

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Office Hours: MW 4:00-5:15 PM, TR 2:00-2:50 room 2019, plus by chance/arrangement.

During lab and office hours, check both 3906A and 2019 as I may go back and forth.

Course description: Design and implementation of larger programs in C++ using software engineering principles. Emphasis on definition and use of data structures. Includes specification of Abstract Data Types, recursion, dynamic memory allocation, stacks, linked lists, queues, binary trees, random access files, and use of hash codes. Designed to satisfy ACM guidelines for CS 2 as required for Computer Science and related transfer majors. Prerequisite: CSCI 15.

This is NOT an introductory computer-programming course. I assume you have written several intermediate-length student programs in C++ (4- to 6-pages of code or more) and know how to create a multi-source-file project in an IDE like Quincy or Visual Studio. You will write several intermediate-length-to-long student programs, comprising as much as 10 or more pages of code.

Topic list, in rough sequence: linked lists, stacks, queues, introduction to graphs and trees (n-ary, binary, binary search, heaps), sorting, searching, hashing, more on graphs and trees. An introduction to algorithm analysis will be scattered throughout the course.

Recommended Text: C++ Classes and Data Structures, Jeffrey S. Childs, Pearson Prentice Hall, ISBN-13 978-0-13-158051-0. This book is available in electronic form. I will also take some material from Data Structures and Algorithm Analysis in C++, 3rd Ed. Mark Allen Weiss, ISBN 0-321-44146-X and from some other sources. See my class Web site for links to several Web resources. If you want to use a different book, clear it with me in advance.

Grading policy:

Programming assignments/homework/labs/possible (pop) quizzes - 30%

2 midterm exams (probably weeks 7 and 12) - 20% each

The final exam (must be taken as scheduled to pass the course) - 30%

If you cannot make an exam, you MUST contact me BEFORE the exam.

Grade ranges will be as follows: 90%-up - A, 80%-89.9% - B, 65%-79.9% - C, 50%-64.9% - D, less than 50% - F. If you find you cannot make class, or are often late, DROP. I may adjust these ranges depending on the overall performance of the class. When emailing me, PLEASE use PLAIN TEXT emails (no graphics, HTML or special fonts), use CS20 as the first characters on the subject line (exactly CS20, not CIS or CSCI), then your name and (briefly) why you're e-mailing me, and ATTACH any files you want to discuss. Also, tell me enough in the body of the e-mail to let me know what to look at for your question.

DO YOUR OWN WORK. COPYING PROGRAMS WILL RESULT IN SEVERE CONSEQUENCES, POSSIBLY INCLUDING A GRADE OF F IN THE COURSE AND A REPORT OF ACADEMIC DISHONESTY TO THE COLLEGE.