CSCE 2100 Computing Foundations I

Instructor Information

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Teaching Assistants:

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Course Description

This course introduces students to both data structures and formalisms used in computer science, such as asymptotic behavior of algorithms. The text does an excellent job of weaving these topics together so that students learn about data structures and the formalisms used to both describe and evaluate those data structures simultaneously. By the end of the two-semester sequence of which this course is the first part, each student will have a solid foundation in conceptual and formal models, efficiency, and levels of abstraction as used in the field of computer science.

Prerequisites

CSCE 1040

Textbook

We will be using an online text this term.
Authors Alfred Aho and Jeffrey Ullman
Title Foundations of Computer Science
URL http://infolab.stanford.edu/~ullman/focs.html

Learning Outcomes

Students will demonstrate:
1. A solid foundation in conceptual and formal models.
2. The ability to use abstraction in the design and description of algorithms.
3. Use of C++ classes to implement trees, and lists.
4. Application of Big-Oh notation to evaluating and comparing algorithms.
5. Use of tree, and list data structures in design of software.
6. An ability to apply combinatorics in solving real-world problems.

Topics
• Iteration, induction, and recursion
• The running time of programs
• Trees
• Lists
• Combinatorics

Grading
• Homework (20%)
• Programs (20%)
• Exam1 (20%)
• Exam2 (20%)
• Programming Exam (20%)

Collaboration and Cheating
The Department of Computer Sciences cheating policy will be adhered to. Any student caught cheating *will receive a grade of F* for this course, and further disciplinary action will be taken. Cheating includes, but is not limited to, all forms of plagiarism and misrepresentation. See the UNT Center for Student Rights and Responsibilities web page for more information.

SETE
The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

ADA
UNT complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disability Act of 1990 (ADA). If you have a disability and need a reasonable accommodation for equal access to education or services please contact the Office of Disability Accommodation.

TENTATIVE SCHEDULE

Class	Day	Material
1	Wed, 29. August	Introduction
	Mon, 3. September	Labor Day – University Closed
2	Wed, 5. September	Debugging
3	Mon, 10. September	C++
4	Wed, 12. September	C++
5	Mon, 17. September	Iteration, Recursion
6	Wed, 19. September	Induction
7	Mon, 24. September	Induction
8	Wed, 26. September	Lists
9	Mon, 1. October	Stacks, Queues
10	Wed, 3. October	Longest Common Subsequence
11	Mon, 8. October	Trees
12	Wed, 10. October	Recursion on Trees
13	Mon, 15. October	Binary Trees
14	Wed, 17. October	Review Exam 1
15	Mon, 22. October	Exam 1
16	Wed, 24. October	Heaps
17	Mon, 29. October	Performance Measures
18	Wed, 31. October	Iteration Runtime Analysis
19	Mon, 5. November	Recurrence Relations
20	Wed, 7. November	Recursion Runtime Analysis

Class	Day	Material
21	Mon, 12. November	Combinatorics
22	Wed, 14. November	Combinatorics
23	Mon, 19, November	Probability Theory
24	Wed, 21. November	Advanced C++ Concepts
25	Mon, 26. November	The Standard Template Library
26	Wed, 28. November	Review for Exam 2
27	Mon, 3. December	Exam 2
28	Wed, 5. December	Review for Programming Exam
	Mon, 10. December	Programming Exam 1:30 pm – 3:30 pm