CIS 606  Analysis of Algorithms  
Spring 2010

Section 50: 4:00pm-5:15pm TTH,  BU 113
Prerequisite: CIS 265

Instructor:  Timothy Arndt
Office Phone: (216) 687-4779

Office location: BU 331
Office hours 12:00pm – 1:00pm TTH,  
5:30pm-7:30pm TTH, or by appt.

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Text:

Last day to drop: F, January 29 (without W grade),  F, April 2 (with W grade).
Final Exam: 4pm - 6pm T, May 11

Catalog course description: Algorithms and their time/space complexities; models of 
computation; design of efficient algorithms: recursion, divide-and-conquer, dynamic 
programming; algorithms for sorting, searching, and graph analysis. Algorithms for 
parallel computing.

Key concepts: divide-and-conquer, sorting, dynamic programming, greedy algorithms, 
graph algorithms, NP-completeness.

Expected outcomes: students completing this course should be able to design 
appropriate algorithms for complex problems and analyze the complexity of algorithms.

Grading
Assignments (3 - 5) 40%  Midterm Exams (2) 40%  Final Exam  20%
I reserve the right to change the weighting and number of assignments.

The following grading scale will be used to calculate final grades (subject to curving if 
class grades on exams are substantially below expected):

<table>
<thead>
<tr>
<th>Total percentage earned</th>
<th>Total percentage earned</th>
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<tbody>
<tr>
<td>93 - 100%</td>
<td>A</td>
</tr>
<tr>
<td>90 - 92%</td>
<td>A-</td>
</tr>
<tr>
<td>87 - 89%</td>
<td>B+</td>
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<tr>
<td>83 - 86%</td>
<td>B</td>
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<tr>
<td>80 - 82%</td>
<td>B-</td>
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<tr>
<td>70 – 79%</td>
<td>C</td>
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<tr>
<td>69% and below</td>
<td>F</td>
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Course policy
(1) Class participation and preparation
• Class participation and regular attendance are expected. If a student misses a class, the student is responsible for bringing herself/himself up-to-date on class material and assignments.
• All students are expected to read the assigned chapters prior to coming to class.

(2) Exams
• Exams will be based on the combination of: material covered in lectures, the assigned reading from the textbooks and material covered in the notes.
• All exams are closed books and closed notes.

(3) Homework assignments
• All homework assignments are due at the beginning of class on the specified date. An assignment turned in one day late will get a 10% penalty, two days late will get a 20% penalty, etc. Assignments turned in after the beginning of class on the due date will be counted as one day late and will receive a 10% penalty.
• All assignments must be individually and independently completed. Should two or more students turn in substantially the same solution or program, in the judgment of the instructor, the solution will be considered a group effort. All involved in a group effort homework will receive a zero grade for that assignment.
• No late assignment will be accepted after the assignment is graded and returned.
• A printed copy of each homework assignment must be turned. If you must miss a class when the assignment is due, you may e-mail a copy of the assignment in order not to have a late grade, but your assignment will only be graded when you have turned in an identical, printed copy.
• You may discuss the interpretation of the assignment with your classmates, however you may not discuss possible solutions.

(4) Make-up exams:
• Make-up exams will only be given in case of serious need and only when the instructor is notified prior to the exam time. If this is not done, the grade is automatically 0 for that exam.
• Written verification for the student’s inability to take an exam will be required.

(5) Class cancellation:
• If I need to cancel class for any reason, I will try to put an announcement on the course web page as early as possible.

(8) Grading mistakes
• All grading mistakes must be corrected within one week of the return of the assignment or exam. No exceptions.
• It is your responsibility to verify that your exams/assignments have been graded correctly.

Tentative Schedule of Topics

Week 1

   Introduction

   Growth of Functions
Week 2
  Divide-and-Conquer

Week 3
  Heapsort
  Quicksort

Week 4
  Linear Time Sorting

Week 5
  Review of Data Structures
  Hash Tables

Week 6
  Binary Search Trees
  Red-Black Trees

Week 7
  Dynamic Programming

Week 8
  Greedy Algorithms

Week 9
  B-Trees

Week 10
  Graph Algorithms

Week 11
  Minimum Spanning Trees

Week 12
  Matrix Operations

Week 13
  Polynomials and the FFT

Week 14
  NP-Completeness
Week 15
Approximation Algorithms

Student Conduct:

Students are expected to do their own work. Academic misconduct, student misconduct, cheating and plagiarism will not be tolerated. Violations will be subject to disciplinary action as specified in the CSU Student Conduct Code. A copy can be obtained on the web page at: http://www.csuohio.edu/student-life/student_handbook/index.html or by contacting Valerie Hinton Hannah, Judicial Affairs Officer in the Department of Student Life.