



Course title and number CSCE 411 Design and Analysis of Algorithms  
Term (e.g., Fall 200X) Fall 2011  
Meeting times and location MWF 3:00-3:50pm HRBB 113

### Course Description and Prerequisites

The course focuses on the study of computer algorithms, in particular design paradigms of algorithms, the analysis of time and space requirements of algorithms, and the correctness of algorithms. Furthermore, the course studies NP-completeness and undecidability.

Prerequisites: CSCE 221 and CSCE 315

### Learning Outcomes or Course Objectives

At the end of the semester, you should:

- be familiar with fundamental algorithms and algorithmic techniques;
- given a particular application, be able to decide which algorithm among a set of choices is best;
- be able to prove correctness and analyze running time and space complexity of a given algorithm;
- be able to design efficient algorithms for new situations using the techniques learned;
- be able to prove that a problem is NP-complete using reduction and understand the implications;
- understand the notion of undecidability, know that some problems are undecidable, and comprehend the implications.

### Instructor Information

Name Prof. Dr. Andreas Klappenecker  
Telephone number 979 458 0608  
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Office hours MT 2:00-2:50pm or by appointment  
Office location HRBB 509B

### Textbook and/or Resource Material

Cormen, Leiserson, Rivest, Stein: Introduction to Algorithms, 3rd edition, The MIT Press, 2009.

### Grading Policies

Your grade will be based on these components:

- Quizzes: 10% (your lowest quiz grade will be dropped)
- Homeworks: 40% (written problems and programming assignments)
- Exams: 45% (one midterm worth 20% and one final exam worth 25%)
- Culture reports 5% (5 reports, see course webpage for deadlines)

The course grades will be assigned according to the scale:

A (90-100 % of total points), B (80-89%), C (70-79%), D (60-69%), F (0-59%)

A curve might be applied if the course average is below expectation.

Grades must be earned and are not negotiable.

## Course Topics, Calendar of Activities, Major Assignment Dates

The midterm exam is tentatively scheduled for Monday, October 10, in class.  
The final exam is scheduled for Wednesday, December 14, 8:00am.

A tentative schedule is given below:

<b>Dates</b>	<b>Topic</b>	<b>Required Reading</b>
M Aug 29	Introduction	
W Aug 31	Sorting Lower Bound	
F Sep 2	Sorting Lower Bound	
M Sep 5	Divide and Conquer Algorithms	
W Sep 7	Divide and Conquer Algorithms	
F Sep 9	Divide and Conquer Algorithms	
M Sep 12	Greedy Algorithms	
W Sep 14	Greedy Algorithms	
F Sep 16	Greedy Algorithms	
M Sep 19	Matroids	
W Sep 21	Matroids	
F Sep 23	Matroids	
M Sep 26	Dynamic Programming	
W Sep 28	Dynamic Programming	
F Sep 30	Dynamic Programming	
M Oct 3	Amortized Analysis	
W Oct 5	Amortized Analysis	
F Oct 7	Amortized Analysis	
M Oct 10	Midterm Exam	
W Oct 12	Graph Algorithms	
F Oct 14	Graph Algorithms	
M Oct 17	Graph Algorithms	
M Oct 24	Graph Algorithms	
W Oct 26	Graph Algorithms	
F Oct 28	Graph Algorithms	
M Oct 31	Randomized Algorithms	
W Nov 2	Randomized Algorithms	
F Nov 4	Randomized Algorithms	
M Nov 7	Randomized Algorithms	
W Nov 9	Randomized Algorithms	
F Nov 11	Randomized Algorithms	
M Nov 14	NP-Completeness	
W Nov 16	NP-Completeness	
F Nov 18	NP-Completeness	
M Nov 21	NP-Completeness	
W Nov 23	NP-Completeness	
F Nov 25	No class	
M Nov 28	Undecidability	

W Nov 30                      Undecidability  
F Dec 2                        Undecidability  
M Dec 5 (A&M: F Dec 5) Review

### **Other Pertinent Course Information**

The course webpage is

<http://faculty.cs.tamu.edu/klappi/csce411-f11/index.html>

You will find homework assignments, a current class schedule, and other information on that page

### **Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>

### **Academic Integrity**

*For additional information please visit: <http://aggiehonor.tamu.edu>*

*“An Aggie does not lie, cheat, or steal, or tolerate those who do.”*