CSC 320: Algorithms
Weekend Fall 2007

OVERVIEW OF COURSE CONTENT:
Welcome to CSC 320, Algorithms! This is an important class and is a cornerstone in the computer science major/minor. Many of you may be asking "Why study algorithms?" Although there are many reasons to study algorithms, two reasons that stand out among the rest are 1) Computer Science is a science and you need a way to be able to articulate your solutions to a problem in a precise and concise way and 2) you need to know what the cost is of your solution so you know whether or not it is "better" than another proposed solution. This class provides a systematic study of algorithms and their complexity, including searching and sorting algorithms, mathematical algorithms, scheduling algorithms, tree and graph traversal algorithms, P, NP, NP-complete and intractable problems. In addition, the course satisfies both the critical thinking and the quantitative reasoning requirements.

INSTRUCTOR INFORMATION:

Instructor:	Shana Watters
Email:	watterss@augsburg.edu
Phone:	612-330-1142
Office:	Sverdrup 203F
Office Hours:	Thursdays: 4:45 pm – 5:45 pm Additional Office Hours: TBA By appointment (email or call to set up appointment)

CLASS INFORMATION:

Class Day:	Saturday
Class Time:	8:30 am – 12:00 pm (noon)
Classroom:	Sverdrup 206
Class Dates:	September 8, September 22, October 6, October 20, November 3, November 17, December 1, December 8

REQUIRED MATERIAL:
1) Cormen, Thomas H., Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, *Introduction to Algorithms*, Second Edition, McGraw-Hill Book Company, 2003, ISBN 0-07-013151-1
2) Access to Java
3) Access to Moodle

   We will be using Moodle for this course. To access Moodle, you will need access to AugNet. Contact the IT department at Augsburg if you do not have a login and password for AugNet (this is the same login and password used for "augsburg.edu" web-mail). If you have another e-mail account you will still need to get an Augsburg login from IT, You can request a login and password by contacting the IT department by one of following ways;

   a) http://www.augsburg.edu/stucomp/
   b) email: stucomp@augsburg.edu
   c) phone: 612-330-1400
   d) visit: Student Computing Desk on the second floor (link level) of the library.

ATTENDANCE POLICY:

Attendance is important for this class. The class meets every other Saturday (exception is the final week) and there will be a large amount of information disseminated. To encourage attendance, you will be given 6 in-class quizzes, activities, or participation exercises over the course of the semester each worth 1% of your overall grade. If you will be absent from class, please notify the instructor as soon as possible. You may contact the instructor via the telephone or email.

GRADES:

6 In-class quizzes, activities, and participation; 1% each	6%
6 Homework Assignments; 9% each	54%
Project	10%
2 Exams; 15% each	30%
Total	100%

Using the above percentages, 90% and up will earn you some level of A, 80% and up some level of B, 70% and up some level of C, 60% and up some level of D. These cutoffs are the baseline grading system. In most cases, changes are not required but in certain cases the cutoffs may be lowered. As the course progresses, the instructor will discuss with the class any changes to this grading system.

HOMEWORK:

You will be assigned homework each week. These homework assignments will help you assess your understanding of the material. There will be a total of 7 homework assignments. Each assignment will be worth 9% of your overall grade.

Homework assignments will be posted on Moodle each week and the homework assignment will cover the material that was covered during the lecture of that week. Your homework will be collected at the start of each class. Please ensure your homework is legible.

Collaboration Policy: You are encouraged to **talk** to your fellow students about the homework problems. Many of the problems are difficult and collaboration may help you understand the problem. However, when you are writing your solutions to the homework problems, you are required to do the following two things:

1) you must state on your homework the students' names that you discussed the problem with
2) you must write up your homework solutions by yourself; you are not allowed to copy the answer of another student

Late Homework Policy: Homework will not be accepted late unless prior arrangements have been made with the instructor. Homework will be turned in at the start of class.

If you know you will be absent on a due date, inform the instructor and turn in the assignment by the due date and time. You may send the instructor your homework via email or drop it off at the instructor's office.

EXAMS:

There will be 2 open book/open notes exams. Each exam will be held at the start of the class and will be 90 minutes long. Each exam will be worth 15% of your overall grade. The exams will be based on the

material covered by the assigned readings, lectures, discussions, homework, and in-class quizzes and activities.

To help ensure that students are prepared for the exam, a short review will be held during the class that is prior to the exam itself.

PROJECT

There will be one project. The project will be worth 10% of your overall grade. The purpose of the project is to help build your skills in analyzing algorithms. You will be given 4 sorting algorithms and will implement them in Java. Your implementations will add counters so you will be able to compare the algorithms. You will hypothesize how the sort algorithms should compare, run your Java programs with given inputs, and determine how the algorithms actually compare. You will write up your findings and substantiate your hypotheses based on your results.

Collaboration Policy for Project: Although the project needs to be completed by yourself, you are encouraged to **talk** to your fellow students about the project. Talking does not mean copying someone else's work or using their code to run your inputs. When you are writing up your findings, you are required to do the following two things:

1) you must state on your project's write-up the students' names that you discussed the project with
2) you must write up the findings by yourself

ACADEMIC HONESTY

All work submitted must represent your own individual effort. You are encouraged to discuss course material, approaches to homework problems, and the project with classmates and the instructor, but you should never misrepresent someone else's work as your own. It is also your responsibility to protect your work from unauthorized access. Collaboration on exams, copying homework solutions from your classmates, or copying homework solutions from the web is cheating and grounds for failing the course. Any student caught cheating will receive as a minimum a "zero" on the exam or homework and may be given an F as a class grade.

For further information on Augsburg's Academic Honesty Policy, please see the Student Guide at http://www.augsburg.edu/studentguide/ .

SPECIAL NEEDS AND ACCOMMODATIONS:

If you have a disability that requires special needs, please contact me by the second class and provide documentation of what you require from either the Augsburg College Access Center (ACCESS) or the Center for Learning and Adaptive Student Services (CLASS). We will work together to accommodate your needs.

ACCESS
Mortensen Hall, Room 13
Monday – Friday
8:00 a.m. – 4:30 p.m.
612-330-1350

CLASS
2211 Riverside Avenue CB #57
612-330-1053
class@augsburg.edu

SCHEDULE:

Week	Date	Topics	Pages	Assigned On This Date	Due On This Date
1	9/8	Syllabus Overview Ch 1: The Role of Algorithms in Computing Ch 2: Getting Started Ch 3: Growth of Functions Ch 4: Recurrences	5-89	HW1 PROJECT	
2	9/22	Ch 6: Heapsort Ch 7: Quicksort Ch 8: Sorting in Linear Time	127-181	HW2	**HW1**
3	10/06	Ch 10: Elementary Data Structures Ch 11: Hash Tables Review for Exam 1	200-252	HW3	**HW2**
4	10/20	**Exam 1 covering Ch 1, 2, 3, 4, 6, 7, and 8** Ch 12: Binary Search Trees	253-272	HW4	**HW3**
5	11/03	Ch 15: Dynamic Programming Ch 16: Greedy Algorithms	321-404	HW5	**HW4** **PROJECT**
6	11/17	Ch 22: Elementary Graph Algorithms Ch 23: Minimum Spanning Trees Ch 24: Single-Source Shortest Paths	525-618	HW6	**HW5**
7	12/01	Ch 34: NP Completeness Ch 35: Approximation Algorithms Review for Exam 2	966-1052		**HW6**
8	12/8	**Exam 2 covering Ch 10, 11, 12, 15, 16, 22, 23, and 24**			