COSC 5334 Design and Analysis of Algorithms*  
Fall 2011

I. General Information
Time/location: MWF 11:00 - 11:50 am, CS-103
Professor: Dr. Hongyu Guo
Office: CI-305
Office hours: MW 2:00pm-4:30pm or by appointment
Phone: (361) 825-3492
Email: hongyu.guo@tamucc.edu
http://www.sci.tamucc.edu/~hguo/web_teaching/web_fall2010/web_cosc5334

Textbooks
Required:
- Computer Algorithms, Pseudocode
  Authors: Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran
  Publisher: Computer Science Press
  ISBN-10: 0716783169
Reference (optional):
- Algorithm Design, by J. Kleinberg and E. Tardos, Addison-Wesley

Prerequisites: COSC 5321, MATH 2413, MATH 2305

II. Catalog Description
An advanced course that concentrates on the design and analysis of algorithms used to solve a variety of problems. The methods of design covered include such topics as: divide-and-conquer, the greedy method, dynamic programming, search and traversal techniques, and backtracking.

III. Student Learning Outcomes
Upon successful completion of the course, a student will be able to:
- analyze time complexity of algorithms;
- comprehend algorithm design paradigms: greedy method, divide and conquer and dynamic programming;
- improve skills in designing algorithms to solve problems using these design paradigms;
- comprehend the concept of NP hard and NP complete problems.
- learn to use LyX/LaTeX to prepare documents for publication (optional).

IV. Outline of Course Topics (tentative)
- Introduction
- Stable Marriage Problem
- Algorithm Time Complexity
- Randomized Algorithms
- Divide and Conquer
- Greedy Method
- Dynamic Programming
- Selected Topics: Algebraic Algorithms (time permits)
- NP hard and NP complete problems

V. Course Evaluation
The course grade will be determined as follows:
- homework 25%
- midterm exam 35%
- final exam 35%
- class attendance and participation 5%

The midterm exam date will be announced at least one week prior to the exam. The final exam date is scheduled by the university and can be found on the university Web site.

VI. Homework
In the homework assignments, students design algorithms using pseudo code to solve various problems. A hard copy of homework assignment must be turned in when it is due. Hand written homework is acceptable but it must be written legibly. The student may lose up to all the points if it is not legible. The student are strongly encouraged to use LyX/LaTeX because this is a useful skill leading to productive publications in the future. Typed printed homework using math fonts for math formulas prepared using LyX/LaTeX receives 10% extra credit. You can download and install LyX for free at http://www.lyx.org/. Using LyX/LaTeX in plain text mode without using math fonts for math formulas will not receive 10% extra credit.

VII. Late Submissions
Late submissions are not accepted.

VIII. Backup Copies and Grading Errors
The students are required to make backup copies of both their electronic and hardcopy submissions and keep ALL graded materials. The department makes the best effort to maintain the systems but it may not be held liable for loss of data stored on the systems in the event of system failures. In case of any grading or recording errors or doubts, the student may be asked to show the backup submission or the graded material for correction or verification. All grading disputes must be resolved within one week after the graded material is returned to the student.

IX. Exams and Makeup Exams
The students are required to come to the exams on time. A student coming to the exam 30 minutes or more after the exam starting time is not allowed to take the exam and will receive a zero grade on the exam. This policy is the same to all students, including students requesting for special accommodations.
No student is allowed to leave the classroom within the first 30 minutes of the exam.
There will be no makeup exams. Arrangements can be made in case of emergency but the student needs to inform the professor in advance unless the emergency is unexpected and the student needs a letter from the office of academic affairs.

X. Class Attendance
Class attendance and active participation is required and makes up 5% of the total grade. The student is STRONGLY ENCOURAGED to ask questions during the lectures and this is viewed as part of the class participation. Five or more unexcused absences will result in the loss of that 5% of the total grade. If the student is absent from class, he or she is responsible for any materials covered, handouts and any announcements made in class, regarding (but not limited to) class schedule, homework, project and exams. Cell phones must be turned off during class.

XI. Collaboration Policy
All assignments and projects must be completed individually, if they are not assigned to teams. On individual assignments, the students MAY NOT work together. The students may ask each other for general advice, but they may not share final answers. Word to word copy from another student or from the work of previous semesters (especially word to word copy of wrong answers) is evidence of cheating and "We did the homework together" is not an excuse.

XII. Academic Dishonesty
The student is expected to avoid all forms of academic dishonesty as defined in the Catalog. In addition, students are expected to behave in an ethical manner in all class and lab activities. If the student feels uncertain about a particular activity, he/she should speak to the professor BEFORE problems arise. If cheating is found, the student receives 0 score for that particular homework assignment, project or exam. In addition, the final grade will be down graded one letter grade. That is A to B, B to C, C to D, D to F and F to F.

XIII. Notice to Students with Disabilities
Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

XIV. Academic Advising
The College of Science and Technology requires that students meet with an Academic Advisor. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.
XV. Grade Appeal Process
As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

*Note: This syllabus is tentative and subject to change. Any changes will be announced in class. It is the student’s responsibility to obtain this information.