CSC 349: Design and Analysis of Algorithms
Spring 2010
Course Syllabus

March 22, 2010

Instructor: Alexander Dekhtyar
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What	When		Where
Lecture	TR	8:10 – 9:30pm	14-246
Lab	TR	1:40 – 3:-00pm	14-302 (Database Lab)
Final Exam	June 10 (Tuesday)	7:10 - 10:00am	14-246

Office Hours

	When	Where
Tuesday	11:00am - 12:00pm	14-215
Wednsday	9:00am - 12:00pm	14-215
Thursday	1:00pm - 2:00pm	14-215

Additional appointments can be scheduled by emailing the instructor at *dekhtyar@cs.uky.edu*.

Overview

This courses introduces you to the concepts and techniques of algorithm design and analysis. Students who complete the course will understand the role of algorithms in computer science; will become familiar with a number of classical computer science algorithms and will understand the meaning and the significance of complexity classes P, NP, NP-complete and NP-hard and will know examples of problems from these classes.

Textbook

Required: *Introduction to Algorithms*, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, 2nd Ed., MIT Press, 2001.

Furlough Days

During the quarter I will observe the following furlough days:

Date	Day of Week	Effect
April 12	Monday	*no effect*
April 27	Tuesday	no class
May 14	Friday	*no effect*
May 20	Thursday	no class
June 4	Friday	no pre-final exam office hours
June 7	Monday	no pre-final exam office hours

Topics

The following will be covered in the course.

No.	Topic	Duration (weeks)
1.	Introduction: algorithms and algorithm analysis	1
2.	Greedy algorithms	1
3.	Dynamic programming	2
4.	Divide and conquer algorithms	1
	Midterm 1	Topics 1 – 4.
5.	Algorithms on graphs	2-3
6.	Algorithms on strings	1
	Midterm 2	Topics 5—6.
7.	NP-complete problems	1
	Final Exam	Comprehensive

Most of the topics will be covered in the order specified above, but some variations are possible during the course.

Grading

Homeworks and Labs	10-20%
Midterm Exams	40-50%
Final Exam	40-45%

I give relatively hard problems and take points off on exams. Because of this, the traditional 90-A, 80-B, 70-C grading schema does not work in my classes. Historically, the A/B cutoff has been around 80-85%, while the B/C cutoff has been around 70%.

Course Policies

Exams

There will be two midterm exams and a comprehensive final exam.

The tentative midterm exam dates are May 4 (Tuesday) and May 27 (Thursday).

The midterm exams will take place during lab periods, or, lab periods on the days of the midterm exams will be used for lectures. (see **Furloughs** above for the reasons).

Official date for the final exam: June 10 (Tuesday), 7:10am.

Make-up exams will not be given, *unless there are extraordinary circumstances present and I am notified in advance.* The policy regarding the use of textbooks and notes will be announced at least one week prior to each exam.

Homeworks, Labs

There will be 7-10 lab assignments and, possibly, a number of homework assignments.

Lab assignments are intended to give you hands-on experience with designing and implementing well-known algortihms and applying classical problem-solving techniques. Most of the lab assignments will be done in pairs or small groups, although individual assignments are possible as well.

Paper-and-pencial homework assignments will test your problem-solving skills related to algorithm design and analysis. They will also prepare you for midterm exams.

Programming homework assignments are also occasionally possible. These assignments will involve application of learned techniques to solving specific problems.

All programming in this course will be done in Java.

Late Submissions

All assignments are due at classtime on the due date: homeworks - at the beginning of the class (with grace period extending to the beginning of the lab period); lab assignments - at the end of the lab period. Any deviations from these rules will be spelled out explicitly in the assignments.

Homework/lab assignments submitted later than indicated above will be considered *late submissions*.

If paper-and-pencil homework solutions are distributed on the due date of the homework, ***late homework submissions will not be accepted***. Otherwise, late homeworks can be submitted during next 24 hours for a 10-30% penalty (the exact amount will depend on the submission time and the specific circumstances). No homework submissions will be accepted afterwards.

Late lab assignment submissions can be turned in before or at the beginning of the next lab period for a 10-30% penalty (the exact amount will depend

on the submission time and the specific circumstances[1]). No lab assignment submissions will be accepted after that.

Communication

The class will have an official mailing list. The email address for the mailing list is *cpe-349-01-2104@calpoly.edu*. All students enrolled in the class are automatically subscribed to the mailing list.

I encourage questions during classtime and questions via email. My answers to email questions may be broadcast to the entire class via the mailing list, if the answer may be relevant to everyone (e.g. a correction in a text of a handout, or a clarification of a homework problem), and may also appear on the web page. The questions can also be posted to the mailing list directly. The mailing list will also be used for all annoucements related to the course. It is your responsibility to read your class-related email. Failure to read email posted to cs405001 mailing list cannot be used as an excuse in the class.

Web Page

Class web page can be found at

http://www.csc.calpoly.edu/∼dekhtyar/349-Spring2010

Through this page you will be able to access all class handouts including homeworks, project information and lecture notes (should the latter be written).

Links to web pages with additional information (such as CSLAB database support page) and important notes and announcements will also be posted.

Academic Integrity

University Policies

Cal Poly's Academic Integrity policies are found at

http://www.academicprograms.calpoly.edu/academicpolicies/Cheating.htm

In particular, these policies define *cheating* as (684.1)

> "*. . . obtaining or attempting to obtain, or aiding another to obtain credit for work, or any improvement in evaluation of performance, by any dishonest or deceptive means. Cheating includes, but is not limited to: lying; copying from another's test or examination; discussion of answers or questions on an examination or test, unless such discussion is specifically authorized by the instructor; taking or receiving copies of an exam without the permission of the instructor; using or*

[1]The penalty will be larger if the gap between the two lab periods includes a weekend and smaller otherwise

displaying notes, "cheat sheets," or other information devices inappropriate to the prescribed test conditions; allowing someone other than the officially enrolled student to represent same."

Plagiarism, per University policies is defined as (684.3)

> "... the act of using the ideas or work of another person or persons as if they were one's own without giving proper credit to the source. Such an act is not plagiarism if it is ascertained that the ideas were arrived through independent reasoning or logic or where the thought or idea is common knowledge. Acknowledgement of an original author or source must be made through appropriate references; i.e., quotation marks, footnotes, or commentary."

University policies state (684.2): "Cheating requires an "F" course grade and further attendance in the course is prohibited." (appeal process is also outlined, see the web site above for details.). Plagiarism, per university policies (684.4) can be treated as a form of cheating, although a level of discretion is given to the instructor, allowing the instuctor to determine the causes of plagiarism and effect other means of remedy. It is the obligation of the instructor to inform the student that a penalty is being assessed in such cases.

Course Policies

All homeworks are to be completed by each student **individually**. Lab assignments are to be completed by the appropriate units (individual, pair, group), and no code/solution-sharing between units is permitted. Students are encouraged to discuss class content among themselves but NOT in a manner that constitutes plagiarism and cheating as defined above (e.g., you can solve together a problem from the textbook that had not been assigned in the homework, but you should solve assigned problems individually).