CSE 310: Data Structures and Algorithms
Spring 2011

CSE 310 (SLN: 13729 & 13730)

Day, Time and Location: TTh 10:30-11:45am, BYAC 110 (SLN 13729),
TTh 1:30-2:45pm, ART 220 (SLN 13730)

Instructor: Andrea Richa
Office: BYENG 440
Office hours: Tue &Thu, 12:30-1:15pm, or by appointment
Email: aricha@asu.edu
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Teaching Assistant: Chenyang Zhou
Office Hours: M 12:30-1:30pm, F 2-3pm, or by appointment
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Course Webpage: http://my.asu.edu
Notes, announcements, homework assignments, exam info: Blackboard

Web Material
You have to request the TA to add you to this course on Blackboard at my.asu.edu, if you are not already subscribed. Students are required to check the Bulletin Board – which can be reached from the CSE310 Blackboard homepage by following the link to Discussion Board on the left-hand side of the screen – at least every other day. All course announcements will be posted on the bulletin board (some course announcements may actually be posted on the bulletin board only).

Detailed Schedule of Topics
* Asymptotic Notation (2.5 hours)
* Worst-case Analysis (3.5 hours)
  - Insertion Sort
  - Merge-Sort: Introduction to Divide-and-Conquer Algorithms
  - Quicksort
* Sorting (2.5 hours)
  - Heapsort
  - Sorting Lower Bound
* Medians, Selection Problems: More on Divide-and-Conquer Algorithms (2.5 hours)
* Hash Tables (2 hours)
* Binary Search Trees, Red-Black Trees (4.5 hours)
* Introduction to Dynamic Programming (3.5 hours)
  - Longest Common Subsequence
  - Edit Distance (time permitting)
* Union-Find: Introduction to Amortized Analysis (2.5 hours)
* Graph Algorithms (9 hours)
  - Depth-First Search
  - Breadth-First Search
  - Topological Sort
- Min. Spanning Trees: Introduction to Greedy Algorithms
- Prim’s and Kruskal’s Algorithms
- Shortest Paths
  - Dijkstra's Algorithm: More on Greedy Algorithms
  - Bellman-Ford Algorithm: More on Dynamic Programming (time permitting)

* Time permitting:
  - B-trees; String Matching

**Textbook**

**Grading**

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<td>Homeworks</td>
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This course will have 2 in-class exam during the course of the semester, each of them worth 20%, and a final exam, worth 30%. The midterm exams will be in-class on Feb 14 and Apr 3. The date and time of the final exams are

**SLN 13729**: *Tuesday, May 1, 9:50 - 11:40 AM*
**SLN 13730**: *Tuesday, May 1, 12:10 - 2:00 PM.*

Please mark those dates on your calendar now.

**Homework assignments**
* Some homework assignments will include programming projects.

Below is a tentative schedule for all assignments in the course. Note that the dates for the assignments may change slightly during the semester, to conform to the full coverage of the topics needed, etc.

Hw 1: Jan 5 – Jan 17  
Hw 2: Jan 19 – Jan 31  
Hw 3: Jan 31 – Feb 9  

Midterm 1: Feb 14  

Hw 4: Feb 16 – Feb 28  
Hw 5: Mar 1 – Mar 13  
Hw 6: Mar 15 – Mar 29  

Midterm 2: Apr 3  

Hw 7: Apr 5 – 17  
Hw 8: Apr 19 – ??  

**Brief summary of the University policies on cheating**

Any incidence of cheating in this class will be severely dealt with. This applies to homework assignments, programming assignments, quizzes and tests. The *minimum* penalty for cheating will be that the student
will not obtain any credit for that particular assignment. (This means that if in a test and/or assignment a student is found to have cheated, he/she will obtain zero in that test and/or assignment.) For the homework assignments students are encouraged to discuss the problems with others, but one is expected to turn in the results of one's own effort (not the results of a friend's efforts). If it is a group assignment, the same applies for the members of each group --- that is, the whole group is supposed to be involved in solving all different parts of the assignment. One tends to get very suspicious if two identically wrong results show up in the homework assignment and/or tests. The names of the offenders will be maintained in the departmental files. The repeat offenders may be debarred from the University.