CSC445: Theory of Computation I  
Winter 2015  
Course Syllabus

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Course web-site: http://www.csc.calpoly.edu/~hghariby/CSC445

Office hours: Monday: 12:10–1; Wednesday: 12:10–1 and 2:10–3; Tuesday/Thursday: 10:10–11  
Note: for more efficiency, office hours may be re-arranged in exam-weeks

Textbook (recommended):  

Prerequisite knowledge:  
You are expected to know basic topics in discrete math (CSC141), particularly:  
- Set theory  
- Relations and functions  
- Graph theory  
You are expected to have a good understanding of proof techniques, namely:  
- proof by induction  
- proof by contradiction  
Note: for a quick review of the prerequisite material read Chapter 1 of the textbook.

Major topics covered in this course:  
- Formal Languages. The families of regular, context-free, context-sensitive, and recursively enumerable languages.  
- Phrase-structure Grammars. The families of regular, context-free, context-sensitive, and unrestricted grammars.  
- Abstract Machines. The families of Finite State Automata, Pushdown Automata, Linear-Bounded Automata, and Turing Machines.  
- Chomsky Hierarchy: the relationships between families of languages, grammars and abstract machines.  
- Introduction to Theories of Decidability and Computability; the use of Turing Machines in them. Church-Turing thesis.
Course structure:

**Lectures:** Presentation of course topics. If you miss a lecture, it is your responsibility:
1. to obtain lecture notes from your classmates and lecture handouts from me
2. to find out what announcements were made in the classroom

**Homework:** During the quarter you will receive about 8 homework assignments – these are exercises from your textbook (at the end of each chapter there is a set of exercises). On the due date you will be asked to submit your homework; selected exercises from the homework will be graded. You will get credit for all exercises you have “done” regardless of your mistakes (an evidence of considerable effort towards the solution should be present for the exercise to be considered “done”).

**Note:** it is your responsibility to remember the due dates of your assignments.

**“Self-check” quizzes:** On the course web site you will find a set of quizzes (2 quizzes per topic) on the material covered in the course (answers are provided). The purpose of these quizzes is to give you a chance to self-check while studying the material.

**Midterm exams:** there will be two 50-minute exams during the quarter.

**Final exam:** there will be a 50-minute exam during the finals week (not comprehensive).

**Attention:**
- 1) All homework assignments should be submitted ON or BEFORE the due date.
- 2) There will be NO makeup for a missed exam (a grade zero will be recorded) except for documented special circumstances and extreme emergencies. For documented special circumstances talk to me at least a week prior to the exam with the document(s) in hand. For extreme emergencies inform me about the emergency as soon as possible (phone or e-mail are ok).
- 3) Any incidents of cheating will be severely punished (see the Policy on page 3).

**Grading:**

Your grade for the course will be calculated as follows:

<table>
<thead>
<tr>
<th>Assignment/Test</th>
<th>quantity</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>about 8</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm exams</td>
<td>2</td>
<td>30% each</td>
</tr>
<tr>
<td>Final exam</td>
<td>1</td>
<td>30%</td>
</tr>
</tbody>
</table>

The letter grade for the course will be assigned as follows:

<table>
<thead>
<tr>
<th>Weighted Average</th>
<th>Lowest Grade</th>
<th>Weighted Average</th>
<th>Lowest Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 92%</td>
<td>A</td>
<td>≥ 72.5%</td>
<td>C</td>
</tr>
<tr>
<td>≥ 90%</td>
<td>A–</td>
<td>≥ 70%</td>
<td>C–</td>
</tr>
<tr>
<td>≥ 87.5%</td>
<td>B+</td>
<td>≥ 67.5%</td>
<td>D+</td>
</tr>
<tr>
<td>≥ 82.5%</td>
<td>B</td>
<td>≥ 62.5%</td>
<td>D</td>
</tr>
<tr>
<td>≥ 80%</td>
<td>B–</td>
<td>≥ 60%</td>
<td>D–</td>
</tr>
<tr>
<td>≥ 77.5%</td>
<td>C+</td>
<td>≥ 0%</td>
<td>F</td>
</tr>
</tbody>
</table>

**Note:** “D–“ is a passing grade.
Office hours:
I encourage you to come to my office for help during office hours (office hours are listed at the beginning of this handout). You should come prepared with specific questions, so we can get right to the point. If you missed a class, do NOT expect me to redeliver the lecture for you – you need to learn the material on your own and come to me with specific questions. If there are others waiting, I may have to limit the time I can devote to each student. In such cases, you are welcome to get back in line for another turn.
E-mail or telephone is NOT a substitute for an office hour.

Email:
Use e-mail to report a problem, to inform about a special personal situation, to ask for an appointment. Do NOT email questions seeking help in coursework – use office hours.
NOTE: I’ll provide all the help you need but only in person.
Attention:
1. Don’t expect your email to be answered the same day.
2. Don’t expect your email to be read on weekends or on late hours of weekdays.

Electronic announcements:
Occasionally I will send e-mail messages to the whole class; usually these are details/clarifications on the upcoming homework assignment or test. These messages will be addressed to your Cal Poly account (userid@calpoly.edu). It is your responsibility to ensure that you receive them on time – check your Cal Poly account daily, or forward the e-mail from your Cal Poly account to your daily account.

Classroom civility:
The following is considered disruptive behavior and should be avoided:
- Arriving late
- Cell phones going off in class
- Packing up before the class is dismissed
- Eating in class
- Chatting with neighbors
- Sleeping in class

Cheating Policy:
Academic dishonesty, cheating, and plagiarism are considered serious violations of expected student behavior. See the definition of these acts, as well as Cal Poly rules and policies on these matters at:
http://www.academicprograms.calpoly.edu/academicpolicies/Cheating.htm

Students involved in such cases (ALL parties) will be reported to the Office of Student Affairs and will be expelled from the course with a grade F.