22C:135 Theory of Computation
Syllabus

Instructor: Teodor Rus
Office : 201J MLH, Phone 335-0742
Class hours: MWF 10:30–11:20am, 221 MLH
Office hours: MWF 9:30–10:30am, 201J MLH

Note: This course is given by the College of Liberal Arts and Sciences. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Liberal Arts and Sciences. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Liberal Arts and Sciences. Details of the University policy of cross enrollments may be found at: http://www.uiowa.edu/ provost/deos/crossenroll.doc

Instructor's note: Copying material from any source and using it without citation as one's self work is an academic dishonesty and, depending on its gravity, can be subject of a penalty within a range of punishments from zero credit for the copied work until exclusion from the program.

1 Methodology

The course 22C:135, Theory of Computation, is a required class to both graduates and undergraduates students in the Department of Computer Science, The University of Iowa. Therefore, I will direct this offering of Theory of Computation such that it will be acceptable and useful for undergraduates, acceptable and complete for graduates, and funny for both. We will cover all the material specified in the course description. The teaching methodology will be based on:

1. Class lecturing by the instructor, three times per week. I plan on keeping the following structure of every lecture:
   - Informal presentation of the topic of interest
   - Formalizing the topic of interest
   - Illustrating the topic of interest by in-class problem solving
2. Office hours (held by the instructor and TA).
3. One midterm in-class exam, covering material not yet tested up to the exam day. The midterm is an in-class exam scheduled for Wednesday 22 October 2008.
4. One final exam that is comprehensive and is scheduled on 9:45–11:45am on Wednesday 17 December 2008.

2 Textbooks

I used two textbooks to prepare my lecture notes:

- Michael Sipser, *Introduction to the Theory of Computation*, PSW Publishing Company 1997. This is a very readable book though it is not complete
- Arthur Fleck, *Formal Models of Computation*, World Scientific 2001, AMAST Series in Computing, Vol 7. This is a complete text with regard to the material intended to be covered in this offering of 22C:135.

Since the Theory of Computation is at the core of our profession these books should be in everybody's private library. However, I do know that these are expensive books and I will try to help putting my lecture notes on the web. But lecture notes are good for understanding while a textbook may help in many other ways.

3 Student assessment

Student assessment in this class will be based on the amount of points accumulated during the semester from exams, homework, and in-class work. The total number of points accumulated by a student during the semester will be transformed into student's score, by the following formula:

$$\text{Score} = \text{Midterm} \times 25/100 + \text{Final} \times 30/100 + \text{Assignments} \times 30/100 + \text{InClass} \times 15/100$$

That is, the Score is an averaged sum of the the Midterm Exam Points, (25% of the score in the two midterm exams), Final Exam Points, (30% of the final exam score), Assignment Points, (30% of the score in the assignments, approximatively one every other two weeks), and InClass Accumulated Points (15 % of the score obtained from in-class contribution). In-class contribution measures the students interest in this class by their presence to the lecture presentations and their contributions to problem solving performed during class time. In addition, I will use quizzes at unpredictable times to check students presence and their interest in the class. Quizzes will be graded as InClass Accumulated Points. I will also encourage student personal involvement in this class by grading their individual work done outside the four categories described above. This is called *bonus work* and consists of solving difficult problems and implementing various algorithms on the computers available in the department. While exams, assignments, and in-class contribution will be graded by the TA and instructor, the bonus work will be graded by the instructor and the score will be added to the student's final Score.

4 Grading Procedure

The student grade in this class will reflect student's work in the class. That is, no curving will be applied in the determination of student's final grade. If all students deserve an A all will get it, and this is what I expect. Therefore at the beginning of the semester every student receives an A in this class. It is student's task to keep it. The letter grades will be determined as follows:

1. An A is obtained if $90 < \text{Score} \leq 100$.
2. A B is obtained if $70 < \text{Score} \leq 90$.
3. A C is obtained if $50 < \text{Score} \leq 70$.
4. A D is obtained if $30 < \text{Score} \leq 50$.
5. An F is obtained if $0 \leq \text{Score} \leq 30$, or if the student does not attend the final exam.

These ranges are not absolute. However, the lower limits will not be raised any higher; + and - will be used along with the letter scores in the final result.

Good luck!