CS 5413-900
COMPUTATIONAL COMPLEXITY
Spring 2012

Instructor: Dr. C. Kim, DEH 253, 325-4281, ckim@ou.edu.

Office Hours: MW 3PM – 4PM.

Class Meetings: MW 5:00PM – 6:20PM, FH 334.

Prerequisites: CS 3823 (Theory of Computation).


Course Content: Computational complexity is the study of the structures of computational problems in which problems are related and classified according to their complexity, i.e., degree of difficulty to solve the problems in terms of the amount of computing resources such as running time and/or memory space requirement. In many cases, a new problem can be solved by relating (or reducing) it to a structurally similar problem whose complexity/solution is known. In other cases, the complexity analysis of the given problem reveals that there is no feasible solution, but then it indicates the best possible restriction that can be imposed on the problem so that a solution can be found. Sometimes, this approach allows us to find solutions to (infinitely) many different problems by finding a solution to just one problem belonging to the same complexity class. The course covers basic notions and techniques for analyzing algorithm and problem complexity, such as computing models and their interrelations, computability, reducibility, complexity classes, and completeness/hardness, and focuses on the analysis of the well-known P versus NP problem.

Student Activities:
- Homework Assignments (30 %)
- Midterm Exam (30 %)
- Final Exam (40 %)

Note:
1. Students are required to attend all class meetings.
2. On-line evaluation of this course can be done at http://eval.ou.edu.