Computational Complexity
Spring 2016

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

Office Hours: MW 12PM – 1PM.

Class Meetings: 1:30PM – 2:45PM, SEC M204.

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. Assignments must be submitted on due dates in class.
3. All student activities are individual, not group activities. Plagiarism/cheating will result in an academic misconduct charge.
4. Any student who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.
5. Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see www.ou.edu/content/eoo/pregnancyfaqs.html for commonly asked questions.

6. For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24.7) to learn more or to report an incident.

7. On-line evaluation of this course can be done at http://eval.ou.edu.