

CS 3100 MODELS OF COMPUTATION

Fall 2023

SYLLABUS

Class Meets: 1:25—2:45 p.m., Monday and Wednesday, SFEBB 1110

Instructor: Dr. Haitao Wang

Office: MEB 3418

E-mail: haitao.wang@utah.edu

Office Hours: 3:00—4:00 p.m., Monday and Wednesday, or by appointment (Okay with Zoom but email a request first)

Teaching Assistants: (Office Hours on Canvas)

1. Sai Kumar Mudipalli (Lead TA)

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3. Harshitha Josyula

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Prerequisites: CS 2100 and CS 2420. You are expected to be familiar with the following topics: basic concepts such as sets, functions, trees, graphs, mathematical induction, proof by contradiction, big- O notation, time complexity, and basic understanding of computer programs and algorithms.

Learning Objectives: This course will cover various models of computation and related topics, including finite automata, regular expressions, regular languages, context-free grammars, push-down automata, context-free languages, Turing machines, decidability of languages, problem reductions, intractability, P, NP, NP-hard, NP-Complete, etc.

Textbook (required):

Michael Sipser, *Introduction to the Theory of Computation*, 3rd Edition, 2012.

Course Work and Grading:

Homework: 50% (6-7 problem sets)

Midterm Exam: 20% (in classroom, 1:25–2:45 p.m., Wednesday, October 18)

Final Exam: 30% (in classroom, 1:00-3:00 p.m., Wednesday, December 13)

Note: September 15 (Friday) is the last day to withdraw from classes.

Class Attendance

The official way to attend class is to come to the classroom in person. Lecture recordings will be done through Zoom, and are offered as a courtesy (recordings will be hosted in Media Gallery on Canvas). I will make every effort, but cannot guarantee their availability (e.g. due to technical or internet issues, or simply because I forget to do so; remind me if you see I am not recording the lecture). In any case, you are not supposed to entirely rely on the lecture recordings to do your course work.

Attending class on Zoom will not be allowed unless you get instructor's approval. If you have a good reason to attend a lecture on Zoom, please email your request to me before class. Your reason should not be something that can allow you to attend class on Zoom regularly. Depending on the requests I receive, this policy may be changed during the semester.

Homework Guidelines

Every student is required to abide by the principles and procedures set forth by the University in the Student Code: <https://regulations.utah.edu/academics/6-400.php>. In addition, we have the following guidelines for doing homework assignments of this course.

1. In general, no late homework will be accepted.
2. Everyone should do their own work for the assignments.
3. Discussions of homework problems are allowed only if all parties involved do not know the answers. However, you must limit your discussions with others to a high-level discussion of solution strategies.
4. If during the discussion of a problem among a group of people, the solution for that problem is found, then the names of the people in the group must be listed in the submitted solutions.
5. If a person already has the solution for a problem, then that person should not give out ideas (such as the right approach or method) for that problem to other students.
6. A person who already knows the answer for a problem can help another person who is seeking the answer only by giving "negative information". For example, one may say that "your approach is not correct, because here is a counterexample". But directly telling another person the right approach is not allowed.
7. Before assignments are submitted, no one (including those who already have the answers) should read another's written solutions.
8. If information related to the solutions is from certain written sources (e.g., published papers, books, journals, websites, etc) other than the textbook and lecture notes, then references of those sources must be given in the submitted solutions. Depending on the situations, it is possible that only partial credits will be given for a solution obtained from such written sources.
9. No course materials from this course may be shared or posted online without instructor permission. This includes lecture videos, notes, or slides and problems and solutions from homework assignments.

Academic Misconduct

Other than the homework guideline mentioned above, we will follow the University Student Code (<https://regulations.utah.edu/academics/6-400.php>) as well as the policy of Kahlert School of Computing specified in the Undergraduate Handbook (<https://handbook.cs.utah.edu>).

Students with Disabilities

Resources regarding students with disabilities can be found here: <https://disability.utah.edu/>

Student Mental Health

Resources regarding student mental health can be found here: <https://studentaffairs.utah.edu/mentalhealth/>

Other Information and Policies

Undergraduate Handbook of Kahlert School of Computing (<https://handbook.cs.utah.edu/>) is a good resource regarding the degree requirements and many other policies (e.g., safety, student wellness, graduation requirement, scholarships, non-discrimination policy, sexual misconduct policy, etc). The college semester guideline can be found here: <https://www.coe.utah.edu/students/current/semester-guidelines/>