

CS48300 - Introduction to the Theory of Computation

Fall 2026

Course Information

- Meetings: Tuesday & Thursday, 12:00 PM - 1:15 PM @ BHEE 236
- CRN: 30658
- Course credit hours: 3
- Prerequisites: CS381 - Introduction to the Analysis of Algorithms or equivalent.

Instructor Information

- Instructor: Wei Zhan
 - Email: weizhan@purdue.edu
 - Office hour: Tuesday, 2:30 PM - 3:30 PM @ DSAI 1100

Course Description

This is an introductory undergraduate level course on the theory of computation. We will cover basic topics in **automata theory**, **computability theory** and **complexity theory**, with the goal to establish the mathematical foundations for modeling and reasoning about algorithms and computation. We will build up a systematic framework for classifying computational tasks, in order to understand why some problems could be intrinsically hard to solve by a computer.

Resources

The course will be mainly based on the following textbook:

- *Introduction to the Theory of Computation, 3rd edition*, by Michael Sipser.

More resources available on the [course website](#).

Grading

The grading will be divided into three parts:

- Homework: 30%;
- Midterm exam: 30%;

- Final exam: 40%.

The homework consists of 7 problem sets with 5% grade for each one, and the 6 highest scores will be counted. There will be extra credit problems in each problem set, but the total grade from homework is capped at 30%.

Regular attendance in class is expected but not mandatory, and will not be accounted for in the total grades.

Homework Policies

Submission The homework assignments must be submitted in PDF format. They should be either typeset in $\text{\LaTeX}$, or written legibly and scanned. Submissions will be made through Gradescope. The solutions have to be mathematically rigorous, but try to be as concise as possible.

Collaboration You are allowed to discuss the problems with anyone, including your classmates, instructors during their office hours and other online resources. However, it is highly recommended that you first attempt to solve the problems alone. The final submission **must** be written by yourself only and copying from any source is strictly prohibited. Any help from outside the course **must** be properly cited or acknowledged.

Extension Each assignment will due in **two weeks** after release, at the midnight of the due date with a 3-hour grace period. There will be **no extensions** outside extraordinary circumstances, in which case you need to inform the instructor before the due date.

Exams

The midterm exam will be taken in class on October 15th, and will cover the materials offered in the first 7 weeks. The final exam will cover all materials offered in this course except for the last three special topic lectures. No resources, including books, notes, computers or cellphones, are allowed in the midterm or the final exam.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on the Academic Resources table on your Brightspace homepage.

Accessibility

Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247, as soon as possible.

If the Disability Resource Center (DRC) has determined reasonable accommodations that you would like to utilize in this class, you must release your Course Accommodation Letter to the instructor. Instructions on sharing your Course Accommodation Letter can be found through [this link](#). Additionally, you are strongly encouraged to contact the instructor as soon as possible to discuss implementation of your accommodations.

Nondiscrimination Statement

Purdue University is committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her potential. A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in the Academic Resources table on your Brightspace homepage.

Mental Wellness Statement

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS offices in West Lafayette or Indianapolis.