

# CS3100 Spring 2024

Welcome to CS3100!

## Course Objectives

The following lists the goals for the models of computation course:

- Covers different models of computation
- Finite State Machines
- Pushdown Automata
- Turing Machines
- Mathematical Logic and Satisfiability
- High-level abstraction programming exercises

## Prerequisites

The prerequisite is successful completion of MATH 1210 (C- or better) CS 2100 (C- or better) and CS major status. Should be familiar with linear system solving, logic, proof techniques, graphs, and probability.

## Course Description

We will work on the problems and solutions in automata theory and complexity theory.

## Required Materials

We will have various readings (from class notes and occasional other readings) and as basic text use:

*Sipser. Introduction to the Theory of Computation, PWS, 3rd Edition (required)*

## Assignments

There are 2 types of assignments

- Problem Assignments: These must be completed by the due date and turned in as PDF report files through Canvas. No late assignments will be accepted.
- Quizzes: Weekly quizzes will be assigned during the semester. They will be given each Wednesday during the last half-hour of class. They are closed book. If you are unable to attend class to take a quiz, you must make this known by emailing [tch@cs.utah.edu](mailto:tch@cs.utah.edu) prior to class to explain the circumstances; otherwise, the result is a failing grade.

# Class Syllabus

You must read the assigned material before the class discussion, and the lectures will cover the text on the following schedule (may vary some during semester to accommodate progress):

Date	Topic	Material
Jan 8 - 17	Intro to Basic Concepts	Chap 0: Introduction
<a href="#">Links to an external site.</a>		
Jan 22- Feb 7	Regular Languages	Chapter 1
February 12 - 28	Context-Free Languages	Chapter 2

[Links to an external site.](#)

March 11 - 27                                      The Church-Turing Thesis                                      Chapter 3

[Links to an external site.](#)

March 18 - 27                                      Decidability                                      Chapter 4

April 1 - 10                                      Reducibility                                      Chapter 5  
(pp. 215-226)

[Links to an external site.](#)

[Links to an external site.](#)

April 15 - 22                                      Time Complexity                                      Chapter 7  
(pp. 275-311)

## Class Schedule and Assignments

The lectures and assignments will cover the text and any additional material as we progress through the semester. Assignments will usually be handed out on Monday and due on a Friday after the material is covered.

**Days with no class:**

Monday 15 January 2024/ MLK Holiday

Monday 19 February 2024: President's Day

4-8 March 2024: Spring Break

## Instructor

Instructor:

[Thomas C. Henderson](#)

[Links to an external site.](#), Professor

E-Mail: [tch@cs.utah.edu](mailto:tch@cs.utah.edu)

[tch@cs.utah.edu](mailto:tch@cs.utah.edu)

Office Hours (Zoom) Individual appointments may be scheduled by sending an email request (send email to [tch@cs.utah.edu](mailto:tch@cs.utah.edu)).

TAs:

1. TBA

2. TBA

## Grading Information

The grading distribution will be as follows:

- Problems: 60%
- Quizzes: 40% (in class every week)

You are expected to make a good effort on all assignments based on a careful reading of the assigned material. I will assign a grade based on how reasonable your solution is given the difficulty of the assignment, the time required, and the style and content of the solution. My goal is to look at all your work, and to assign a grade based on your demonstration of thoughtful effort and results. It's better to ask questions before and during an assignment, than to try and understand what went wrong after it's due. The proportions given above delineate how I intend to apportion the weight of the various work in the course. The lowest (non-E) grade will be dropped to determine both the overall assignment and quiz grades.

## Assignment Due Time

Unless otherwise stated in an assignment, all assignments will be due by 5pm on the assignment due date. You should upload only PDF's to Canvas for assignments; quizzes are due at the end of the class when they are given. The time that we use for an assignment is the submit

time. You may supply supporting material in the pdf as well (figures, math analysis, etc.). To hand in assignments electronically, use the upload facility in Canvas.

## **Appeals Procedure**

*See the Code of Student Rights and Responsibilities, or the Class Schedule for more details.*

### **Appeals of Grades and other Academic Actions**

If a student believes that an academic action is arbitrary or capricious he/she should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure:

1. Appeal to Department Chair who should be notified in writing within 40 working days; chair must notify student of a decision with 15 days. If faculty member or student disagrees with decision, then,
2. Appeal to Academic Appeals Committee (see flyers posted in MEB and EMCB for members of committee). See II Section D, Code of Student Rights and Responsibilities for details on Academic Appeals Committee hearings.

## **Assignment Late Policy**

No late work is accepted.

## **Individual Work**

The purpose of the assignments is to improve your skills at solving problems and demonstrating that you understand the class material. Collaboration with other class members is acceptable in understanding problems or software tools. For any individual assignments or work turned in, you must do your own work. Using someone else's work (or CHATGPT) or giving someone else your work is considered plagiarism and will be dealt with using standard College and University procedures (i.e., failure of assignment and class). The SoC policy states: "As defined in the University Code of Student Rights and Responsibilities, academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information. It also includes facilitating academic misconduct by intentionally helping or attempting to help another student to commit an act of academic misconduct. A primary example of academic misconduct would be submitting as one's own, work that is copied from an outside source." (See [Cheating Policy](#)

[Links to an external site.](#)).

## **Registration**

See university web page for the full academic calendar ([Calendar web page](#)

[Links to an external site.](#)). See the university web page for a copy of the withdraw guidelines as well, or see the [Student Code](#)

[Links to an external site.](#).

The college Guidelines for Spring 2024 can be found at [College Guidelines](#)

[Links to an external site.](#).

## **American with Disabilities Act (ADA)**

The University conforms to all standards of the ADA. If you wish to qualify for exemptions under this act, notify the Center for Disabled Students Services, 160 Union. The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.