

# CS 5300 — Compiler Construction

Instructor: Dr. Kenneth Sundberg

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## Description

This course covers the basics of compiler organization, design, and construction. Including review of programming language structures, translation, loading, execution, and storage allocation. Also included are the compilation of declarations, expressions, statements, and procedures/functions.

Materials for this course support the following Computer Science student outcomes:

- SO1** Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- SO2** Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- SO5** Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- SO6** Apply computer science theory and software development fundamentals to produce computing-based solutions.

## Text

The text for this course is *Compilers: Principles, Techniques, and Tools*. You are expected to read the chapter sections being covered in full. The following topics will be covered:

	Chapter
Lexical Analysis	3
Syntax Analysis	4
Intermediate-Code Generation	5
Code Generation	8
Machine-Independent Optimizations	9

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## Class Fees

There are no fees associated with this class.

## Grading

You are expected to attend each class and complete each assignment on time. The final grades will be curved. Grades will be based on the following:

Assignments	70%
Midterm Exams	15%
Final Exam	15%

## Late Policy

Assignments should be submitted on the day assigned. Late work is marked down 10% points per day late. Work more than **3 days** late will not be accepted. No special projects or extra credit work will be given to make up a low grade. If your assignment consists of more than one file please submit a .zip file.

Please verify that all work is graded correctly and returned to you. Keep all work until after the term has ended. If you feel there has been an error in the grading please contact the instructor.

## Learning Aids

Lecture notes and other useful information will be available in electronic form on the class's section of the Canvas system. Please check the class's news and notes sections on a regular basis.

The Computer Science Department is a member of the Microsoft's DreamSpark program. Through this program, students in CS courses can obtain and use a number of Microsoft's operating and software packages. If you are interested in downloading any of this software for your use, please follow the directions found on the department's website.

## Add Policy

The last day to add or drop this course without a notation is January 28<sup>th</sup>. The last day to add this class is January 28<sup>th</sup>. Attending this class beyond that date, without being officially registered, will not be approved by the Dean's Office. Students must be officially registered for this course. No assignments or tests of any kind will be graded for students whose names do not appear on the class list.

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## Drop Policy

The last day to drop this class without notation is January 28<sup>th</sup>.

## Withdrawl and Incomplete Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes:

1. incapacitating illness which prevents a student from attending classes for a minimum period of two weeks.
2. a death in the immediate family
3. financial responsibilities requireing a student to alter a work schedule to secure employment
4. change in work schedule as required by an employer
5. other emergencies deemed appropriate by the instructor

## Cheating

All forms fo cheating are absolutely prohibited. Please read the department's policy ([https://digital.cs.usu.edu/cheating\\_policy.html](https://digital.cs.usu.edu/cheating_policy.html))

## Academic Integrity - "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students.

The Honor Pledge: To enhance the learning enviornment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the formost level of academic integrity." A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

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## Plagiarism

Plagiarism includes knowingly "representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgement. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling.

## Students with Disabilities

The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program". If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center (797-2444), preferably during the first week of the course. Any request for special consideration relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative format, large print, audio, diskette, or Braille.

## Sexual Harassment

Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature". If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

## Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy 403 further defines academic freedom and professional responsibilities.

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## **Grievance Process**

Students who feel they have been unfairly treated [in matters other than (i) discipline or (ii) admission, residency, employment, traffic, and parking - which are addressed by procedures separate and independent from the Student Code] may file a grievance through the channels and procedures described in the Student Code: Article VII Grievances.