CS 355 Introduction to Computer Systems

Summer 2024

Course Credits: 4
Contact Hours: 56 hours
Instructor: TBA
Email:TBA

COURSE OBJECTIVES

This course provides a comprehensive overview of how computer systems function from a programmer's perspective. It delves into the execution of programs, storage mechanisms, and communication protocols within computer systems. Through this course, students gain insights into optimizing program performance, ensuring portability, and enhancing robustness. The knowledge acquired here serves as a solid foundation for advanced courses in compilers, networks, operating systems, and computer architecture.

Upon Completion of this Course, students will be able to:

1. Understand the execution process of programs within computer systems;
2. Analyze and optimize program performance;
3. Demonstrate knowledge of computer arithmetic principles;
4. Describe memory organization and management techniques;
5. Explain networking technologies and protocols.
6. Apply concurrent computation principles in programming.

PREREQUISITES

CS 343 Computer Architecture

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS

5 Assignments	30 Points
2 Quizzes	20 Points
Midterm Exam	20 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

A ≥ 90 > B ≥ 80 > C ≥ 70 > D ≥ 60 > F.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Randal E. Bryant and David R. O'Hallaron, ***Introduction to Computer Systems: A Programmer's Perspective,*** Prentice Hall, 2003.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Introduction to Computer Systems Topic 2: Information Storage Topic 3: Integer Representations and Integer Arithmetic Topic 4: Floating Point **Assessments:** Assignment #1
Module 2	**Topics:** Topic 5: Machine-Level Representation of Programs Topic 6: Processor Architecture Topic 7: Optimizing Program Performance Topic 8: Memory Performance **Assessments:** Assignment #2 Quiz #1

Module 3	**Topics:** Topic 9: The Memory Hierarchy Topic 10: Cache Memories Topic 11: Linking Topic 12: Object Files **Assessments:** Assignment #3 Midterm Exam
Module 4	**Topics:** Topic 13: Exceptional Control Flow Topic 14: Virtual Memory Topic 15: System-Level I/O Topic 16: Operating Systems **Assessments:** Assignment #4 Quiz #2
Module 5	**Topics:** Topic 17: Network Fundamentals Topic 18: The Global IP Internet Topic 19: World Wide Web Topic 20: Concurrent Programming **Assessments:** Assignment #5 Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

1) Late assignments are not acceptable and are subjected to grade deductions.
2) Assignments submitted in the wrong format will be counted as not submitted.
3) Failure to submit or fulfill any required course component results in failure of the class.
4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACEDEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.