CS 228 Introduction to Computer Organization and Assembly Language

Summer 2024

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

COURSE OBJECTIVES

The primary objective of this course is to introduce computer organization and assembly language. It offers comprehensive information on how computers operate with an emphasis on the purposes and interconnections of major components. Additionally, this course covers a more detailed examination of the specific levels. Some focus stays on the assembly language level present on all computers. Students have opportunities to improve their proficiency by writing small assembly language programs.

Upon completion of this course, students will be able to:

1. Gain a comprehensive understanding of basic concepts of computer organization;
2. Have a deep and principled knowledge of how computers operate；
3. Identify the major components of computer architecture, and explain their purposes and interactions；
4. Develop a profound understanding of assembly language;
5. Enhance the capacity to write a basic assembly language program.

PREREQUISITES

CS 101 Computer Science

GRADING

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

ITEM	POINTS
Quizzes	30 Points
Midterm Exam	30 Points
Final Exam	40 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:

Andrew S. Tanenbaum, Todd Austin, ***Structured Computer Organization***, 6th Edition, Prentice Hall, 2012.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	**Topics:** Topic 1: Introduction to Computer Organization Topic 2: Three Popular Instruction Set Architectures: x86, ARM and AVR Topic 3: History and Different Kinds of Computers Topic 4: Introduction to Computer Systems **Assessments:** Quiz#1

Module 2	**Topics:** Topic 5: CPU Topic 6: Primary Memory Topic 7: Secondary Memory Topic 8: I/O (Input/Output) Equipment **Assessments:** Quiz#2
Module 3	**Topics:** Topic 9: Digital Logic Level Topic 10: Microarchitecture Level Topic 11: Instruction Set Architecture Topic 12: Operating System Machine **Assessments:** Midterm Exam
Module 4	**Topics:** Topic 13: Introduction to Assembly Language Topic 14: Format of an Assembly Language Statement Topic 15: Macro Definition, Call, and Expansion Topic 16: Advanced Features and Implementation of a Macro Facility **Assessments:** Quiz#3
Module 5	**Topics:** Topic 17: Assembly Process Topic 18: Two-Pass Assemblers, Pass One, Pass Two, and The Symbol Table Topic 19: Linking and Loading Topic 20: Binding Time, Dynamic Relocation and Dynamic Linking **Assessments:** 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.