CS334  Computer Architecture Fundamentals

Instructor: Dr. Danella Zhao, E&CS Rm 3313, E-mail: dzhao@odu.edu

Office Hours: Friday 9:30-10:45am Zoom recitation class or Piazza forum or by Email appointment

Lecture: Internet based course  https://www.blackboard.odu.edu

Course Description: The goal of this course is to give students a clear understanding of the architecture and organization of modern computers, and the cost and performance tradeoffs involved in their design. The course satisfies both the CS170 and CS270 requirements for the BSCS degree at Old Dominion University.

Topics:
- Number Representation
- Boolean Algebra
- Combinational Circuits
- Arithmetic Units
- Memory System
- Microprogrammed Control Units
- Architecture of Microcomputers
- Component-based System Development
- Performance Evaluation of Competing Architectures

Textbook:
- Reference: David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software Interface”, Morgan Kaufman Publisher

Prerequisites:
1. CS150 or an equivalent course in a high level language; 2. MATH 163 or equivalent.

Students will need to have prior programming experience as well as being prepared in mathematics at least through pre-calculus. The background requirement is firm as many of our explanations will be in terms that will only make sense to those with programming experience and we will also assume the students are proficient in algebra. Students must be comfortable using the Internet, e-mail and software, including a word processor.

Students must be highly disciplined and motivated in the art of self-learning. This includes being able to efficiently read, absorb, and retain new information, as well as being fully capable of studying and understanding new concepts and technical ideas in a timely and independent manner.

Grading: Homework Assignments 25%; Online Blackboard Quizzes 25%, Exams 50%; Recitation Class Attendance for BONUS

Grade Scale: A, 92% and above; A-, 90-92%; B+, 87-90%; B, 82-87%; B-, 80-82%; C+, 77-80%; C, 72-77%; C-, 70-72%; D+, 67-70%; D, 62-67%; D-, 60-62%; F, below 60%

Assignment Policy:
Homework assignments are to be submitted as instructed - typically via Blackboard, on or before the due date. Any assignment submitted after its deadline is considered late. Assignments that are submitted late by one day - 30% off penalty, 2 days - 50% off, 3 days and beyond - not graded and no
credit be awarded. Quizzes are administered via Blackboard. Quizzes expire on the due date, and cannot be taken after they have expired and become unavailable.

Make-ups for graded activities (other than exams) may be possible only with a valid written medical or university excuse, and then only at the instructors discretion. It is the student’s responsibility to give the instructor the written excuse beforehand and to arrange for any makeup work to be done. Make-ups for exams is not allowed. You are encouraged to inform the instructor of conflicts ahead of time, so that alternative arrangements may be arranged if possible.

Academic Integrity:
By attending Old Dominion University you have accepted the responsibility to abide by the honor code:
“I pledge to support the Honor System of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community it is my responsibility to turn in all suspected violations of the Honor Code. I will report to a hearing if summoned.”
Students may still provide legitimate assistance to one another. You are encouraged to form study groups to discuss course topics. Students should avoid discussions of solutions to ongoing assignments and should not, under any circumstances, show or share solutions for an ongoing assignment.

Please see the ODU Honor Council’s webpage at https://online.odu.edu/policies-and-student-responsibilities for concrete examples of what constitutes cheating, plagiarism, and unauthorized collaboration. All students are responsible for knowing the rules.

Disability Services:
In compliance with PL94-142 and more recent federal legislation affirming the rights of disabled individuals, provisions will be made for students with special needs on an individual basis. The student must have been identified, as “special needs” by the university and an appropriate letter must be provided to the course instructor. Provisions will be made based upon written guidelines from the University’s Special Needs Students Resource Office. All students are expected to fulfill all course requirements.