CE/EE 4304.501 Course Syllabus

Course Information

Course Number/Section	CE/EE 4304.501
Course Title	Computer Architecture
Term	2016 Fall
Days & Times	*Mon & Wed: 5:30pm-6:45pm*
Meeting Place	*GR 2.530*

Professor Contact Information

Professor	William P. Swartz, Jr. , Ph.D.
Email Address	bill-swartz@utdallas.edu
Office Location	ECSN 3.610
Office Hours	Monday/Wed 4 – 5:30 PM and by appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisite: CE/EE 3320 (Digital Circuits)

Course Description

Introduction to computer organization and design, including the following topics: CPU performance analysis. Instruction set design, illustrated by the MIPS instruction set architecture. Systems-level view of computer arithmetic. Design of the datapath and control for a simple processor. Pipelining. Hierarchical memory. I/O systems. I/O performance analysis. Multiprocessing.

Student Learning Objectives/Outcomes

The following are the course learning objectives:

- **C001** Understand, and be able to work with, instruction set architectures and the hardware/software interface.
- **C002** Understand, and be able to work with, computer arithmetic
- **C003** Understand, and be able to work with, processor architectures.
- **C004** Understand, and be able to work with, hierarchical memory architectures.
- **C005** Understand, and be able to work with, multiprocessing architectures.

Required Textbooks and Materials

None

Suggested Course Materials

David A. Patterson and John L. Hennessy, *Computer Organization and Design: The Hardware / Software Interface,* Fourth Edition, Revised Printing (Morgan Kaufmann, 2011); ISBN 978-0-12- 374750-1. Any edition is ok. The second edition (out of print) is best.

Assignments & Academic Calendar

Topics covered in the class include but not limited to:

- History
- Performance Measures
- Amdahl's Law
- Representations
- Processor Design
  - Single cycle
  - Multi cycle
  - Pipeline
  - Out-of-Order
- Hierarchical Memory
- Multiprocessor Systems

Homework Due Dates, Exam Dates

Homework will be due at the beginning of class unless otherwise announced via eLearning.
Video quizzes: Announced via eLearning
Midterms: Mon Oct 10, and Wed Nov 7, during class hours (tentatively)
Final examination: TBD

Grading Policy

Homework/Projects: 20%
Quizzes: 10%
Midterms: 30%
Final examination: 40% (cumulative)

Course & Instructor Policies

Make-up exams

Only by permission of the instructor BEFORE the regularly scheduled examination date

Extra Credit

Available for class participation especially at the whiteboard.

Late Work

Homework assignments will be considered late at 11:30 PM the Friday after they are due, and will not be graded without a valid excuse.

Class Attendance

Class attendance is not required. However, material presented in class will substantially augment the optional reading material in the text.

Rules for examinations

1. Seating is assigned randomly for each exam.
2. No materials except for writing instruments are allowed except for the last 10 minutes of the exam. A double-sided 8.5" x 11" sheet of formula cheat sheet will be allowed the last 10 minutes of the exam. Other materials such as books, notebooks and backpacks must be stowed away.
3. No calculators or electronic communication devices are allowed.
4. No questions are allowed during an examination. If you do not understand the statement of a problem, please state the problem that you think is meant, and solve it.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.