COURSE SYLLABUS
COSC 2315.001
COMPUTER ORGANIZATION
Fall 2026

M-W-F 12:20 PM - 1:15 PM
Room# COB 255

Instructor: Arun Kulkarni, Ph.D., Professor of Computer Science

Office: COB315.07
Office Hours: T-R 10:30 AM -2:00 PM, M-W 10:30 AM -12:00 PM
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Course Description: Introduces the concept of computers and information systems by presenting the process of computation as a hierarchy of virtual machines, beginning with the hardware and moving upward through various levels of increasingly sophisticated software. Prerequisites: COSC 1336/1136, MATH 1314, 1324 or 2330.

Textbook: Linda Null (2024) Computer Organization and Architecture. Sixth Edition, Jones and Bartlett, Burlington, MA.

Course Learning Outcomes (CLOs)
1) **Explain** the structured organization of computer systems, including levels of modern computer architecture and key historical milestones.
2) **Apply** metric units and number systems (decimal, binary, octal, hexadecimal) to represent and manipulate data.
3) **Analyze** signed numbers, floating-point representations, and character encoding schemes such as BCD, ASCII, and Unicode.
4) **Construct and simplify** digital logic using Boolean algebra, logic gates, truth tables, and Karnaugh maps.
5) **Design and simulate** basic digital logic circuits using tools such as LogiSim.
6) **Explain and evaluate** memory organization, memory management techniques, and input/output system operations in a computer system.

Topics and tentative time allotment are shown below.

	Topic	Hours
1	Structured Computer Organization	2
2	Levels of Modern Computer System	3
3	Metric Units	1
4	Milestones in Computer Architecture and Example Computer Families	2
5	Decimal, Binary, Octal, Hexadecimal Number Systems	6
6	Negative Numbers and Floating-Point Numbers Representation	3
7	BCD, ASCII and Unicode	1
8	Boolean Gates: Truth Table, Logic Diagram, Boolean Expression	3
9	Introduction to LogiSim, Boolean Algebra and Digital Logic Circuits, Karnaugh maps.	9
10	Memory Management	6
11	Input/Output System	6
12	Multimedia	2

		Evaluation
Test 1	Wednesday, 30-Sep-2026	70 %
Test 2	Wednesday, 11-Nov-2026	
Final Exam	Monday, 7-Dec-2026	
Class Participation		10 %
Assignments		20%

Academic Dishonesty: You are expected to do your own work. You may assist each other with general concepts, but direct assistance with a particular assignment or any attempts to gain an unfair academic advantage will not be tolerated. Cheating is considered a serious academic offense both by the department and the University. It may result in a failing grade from this course for all parties involved. If you have questions about the line between assistance and cheating, discuss it with your instructor. The instructor reserves the right to ask you to explain any assignment that you turn in to judge if the work is yours.

Usage of AI tools: I expect all the work students submit for this course to be their own. I have carefully designed all assignments and class activities to support your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. For this course, I expressly forbid using ChatGPT or any other

artificial intelligence (AI) tools for any stages of the work process, including brainstorming. Deviations from these guidelines will be considered a violation of UT Tyler's Honor Code and academic honesty values.

Disabilities: If you have a disability, including a learning disability, for which you request accommodation, please contact the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579).