

CS-1216-1: Computer Organization and Systems (COS)

Course Objective:

- Understand structures and functions of internal components of a computer.
- Learn digital logic design, combinational and sequential circuits.
- Design and Analyze modern processor's instructions-set.
- Identify methods of processor-memory data transfers and computer I/O.

Text Book:

- Computer Organization and Design -- The Hardware/Software Interface - Fifth Edition, by David Patterson and John Hennessy.

Instructor:

- Goutam Paul (goutam.paul@ashoka.edu.in)

Class Timings:

- Thursday 4:40 PM to 6:10 PM
- Friday 11:50 AM to 1:20 PM

Office Hours:

- Thursday 6:30 PM to 7:30 PM
- Friday 9:00 AM to 10:00 AM

Grading Distribution Percentage:

- Class Participation: 10
- Assignments: 20
- In-Class Quiz: 20
- Midterm: 25
- Final: 25

Syllabus (Tentative):

- Introduction to Computer Systems
- Performance Metrics
- Instruction Sets
- MIPS ISA
- Memory Layouts
- Instruction Formats

- Control Instructions
- Procedure Calls
- Assembly Program
- Number Representations
- Digital Design
- Sequential and Combinational Circuits
- Latches and Flip-Flops
- CPU Design
- Pipelining
- Control Hazard
- Cache Implementation
- DRAM Architecture
- Virtual Memory
- Page Tables
- Multiprocessor