



Jahangirnagar University

Institute of Information Technology

Course outline

Course Code:

ICT-2207

Course Title:

Computer Architecture

Credit Hours:

3.0 hours

Course Level:

2nd Year 2nd Sem.

Course Teacher

Md. Biplob Hosen

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Course objective:

The objective of this course is to:

- Conceptualize the basics of organizational and architectural issues of a digital computer.
- Analyze performance issues in processor and memory design of a digital computer.
- Understand various data transfer techniques in digital computer.
- Analyze processor performance improvement using instruction level parallelism.
- Understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.
- Understand RISC and CISC based microprocessor.
- Understand the concepts of multi-core processor.

Textbook:

“Computer Organization and Architecture” by William Stallings; 8th Edition.

Reference Books:

1. “Computer Organization and Design: The Hardware/Software Interface”; by D. A. Patterson, J.L. Hennessy; 5th Edition.
2. “Computer Architecture and Organization” by John P. Hayes; 5th Edition.

Lesson Plan:

<u>Week</u>	<u>Contents</u>
1	Introduction to Computer Organization & Architecture.
2	Computer Evolution & Performance.
3	Arithmetic Logic Unit (ALU) Design: Arithmetic & Logical Operation, Floating Point Operations.
4	Processor Design: Data Paths- Single Cycle & Multi Cycle Implementations.
5	Control Unit Design: H/W & Micro-Programmed Pipeline- Pipelined Data Paths & Control.

6	Control Unit Design: Hazards & Exceptions.
7	Memory Organization: Cache, Virtual Memory
8	Buses, Multiprocessors, Types of Multiprocessor Performance, Single Bus Multiprocessors, Clusters.
9	Information Representation & Transfer.
10	Instruction & Data Access Methods.
11	Parallel Processing.
12	RISC & CISC Machines.