

COMPUTER ORGANIZATION

EE-504B

Credit: 3

Contact: 3L

Module 1

Basic organization of the stored program in computer and operation sequence for execution of a program. Role of operating systems and compiler/ assembler. Fetch, decode and execute cycle.

Concept of operator, operand, registers and storage. Instruction format. Instruction sets and addressing modes.

Commonly used number systems. Fixed and floating point representation of numbers. [10]

Module 2

Overflow and underflow. Design of address- ripple carry and carry look ahead principles.

Design of ALU

Fixed point multiplication-Booth's algorithm

Fixed point division-Restoring and non restoring algorithms.

Floating point-IEEE 754 standard. [10]

Module 3

Memory unit design with special emphasis on implementation of CPU-memory interfacing.

Memory organization. Static and dynamic memory, memory hierarchy, associative memory.

Cache memory. Virtual memory. Data path design for read/write access. [10]

Module 4

Design of control unit-hardwired and micro programmed control.

Introduction to instruction pipelining.

Introduction to RISC architecture, RISC vs. CISC architecture.

I/O operations-Concepts of handshaking. Polled I/O, Interrupt and DMA. [10]

Text Books:

1. Computer System architecture, M.M. Mano, PHI
2. Computer Architecture, P. Behrooz, Oxford University Press.

Reference Books:

1. Computer Architecture & Organization, J.P. Hayes, Mc Graw Hill.
2. Computer Organization, Hamacher, Mc Graw Hill.
3. Computer Organization & design, P. Pal Chaudhuri, PHI
4. Computer Organization & Architecture, P. N. Basu, Vikas Pub.