

5. Computer Architecture (CS-106)

(3-0-2)

Data Representation, Data Types, Binary Codes and Error Detection Codes, Register Transfer language, Arithmetic, logic and Shift Microoperations. Computer Registers, Instruction Codes, Timing and Control. Computer Arithmetic- Number Representation, Addition, Subtraction, Multiplication and Division Algorithms. General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, RISC Computer, CISC Computer. Pipelining, Arithmetic Pipeline, Instruction Pipeline, Vector Processing. Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, Serial Communication. Memory Hierarchy, Main Memory, Auxillary Memory, Associative Memory, Cache Memory, Virtual Memory. Microprogrammed Control- Control Memory, Address Sequencing, Design of Control Unit.

References:

1. Morris Mano, Computer System Architecture Pearson Education, 2012
2. David A. Patterson, John L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, Morgan Kaufmann, 2009
3. William Stallings, Computer Organization and Architecture: Designing for Performance, Pearson Education, 2007
4. Behrooz Parhami Computer Architectures: From Microprocessors to Supercomputers, Oxford, 2005.