MCA- C103 Computer System Architecture				
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Course objective:

1. To understand the basic hardware and software issues of computer organization.
2. To provide an overview on the design principles of digital computing systems.
3. To understand the representation of data at machine level.

Course outcomes:

1. Ability to analyze the abstraction of various components of a computer.
2. Ability to apply performance metrics to find the performance of systems.

Digital Electronics: Boolean algebra and logic Gates, Simplification of Boolean Functions, Adders, subtractors, Binary parallel adder, Decimal adder, Magnitude comparator, Decoders, Multiplexers. Flip- flops (RS, D, JK, Master- slave & T flip-flops), Flip- flop Excitation table, analysis, Design of counters, Design with state equations, Registers, Shift register, Ripple Counter, Synchronous Counters, Timing sequences.

Central Processing Unit: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt, Bus Interconnection design of basic computer, register organization; Stack organization; Instruction Format and Addressing Modes.

Control Unit: Control memory, Address Sequencing, Micro program, Design of Control Unit.

Arithmetic Algorithms: Integer multiplication; Integer division, Floating point representations and Arithmetic algorithms.

I/O Organization: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Data Transfer, Priority Interrupt, Direct Memory Access, Input Output Processor.

Memory Organization: Memory Hierarchy, RAM, ROM, Associative Memory, Cache Memory Organization and Virtual Memory Organization.

Recommended Books:

1. Hayes J.P, *Computer Architecture and Organization*, McGraw Hill
2. Hamacher Cart, Vranesic Zvono, Zaky Safwat, *Computer Organization*, McGraw Hill
3. Mano M. Morris, *Computer System Architecture*, Third Edition, PHI

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