

Module No.	Unit No.	Topics	Hrs
1		<b>Computer Organization, Architecture and Performance</b>	8
	1.1	Organization and Architecture,	
	1.2	Structure and Function,	
	1.3	Designing for Performance,	
	1.4	Multicore, MICs, and GPGPUs	
	1.5	Two Laws that Provide Insight: Amdahl's Law and Little's Law	
	1.6	Basic Measures of Computer Performance,	
	1.7	Calculating the Mean	
	1.8	Benchmarks and SPEC	
2		<b>Computer System</b>	6
	2.1	Computer Components	
	2.2	Computer Function	
	2.3	Interconnection Structures	
	2.4	Bus Interconnection	
3		<b>Data Representation and Arithmetic Algorithms</b>	5
	3.1	Unsigned & Signed multiplication- Add & Shift Method, Booth's algorithm. Unsigned & Signed division, Restoring and non-restoring division.	
	3.2	Integer and floating point representation, IEEE 754 standard for floating point (Single & double precision) number representation.	
4		<b>Memory System Organization</b>	7
	4.1	Classification and design parameters, Memory Hierarchy ,Internal Memory: RAM, SRAM and DRAM	
	4.2	Cache Memory: Characteristics of Memory Systems, Cache Memory Principles, Elements of Cache, Cache Coherence. Design problems based on mapping techniques	
	4.3	Virtual Memory, External Memory : Magnetic Discs, Solid State Drive, Optical Memory, Flash Memories, RAID Levels	
5		<b>Control Unit Design</b>	8
	5.1	Micro- Operations: The Fetch Cycle, The Indirect Cycle, The Interrupt Cycle, The Execute cycle, The Instruction Cycle	
	5.2	Control of the Processor: Functional Requirements, Control Signals, Internal Processor Organization	
	5.3	Hardwired Control Unit	
	5.4	Microinstructions Microprogrammed Control Unit, Advantages & disadvantages	
6		<b>Fundamentals of Advanced Computer Architecture</b>	5
	6.1	Parallel Architecture: Classification of Parallel Systems,	
	6.2	Flynn's Taxonomy, Array Processors, Clusters, and NUMA Computers	
	6.3	Multiprocessor Systems : Structure & Interconnection Networks	
	6.4	Multi-Core Computers: Introduction, Organization and Performance.	
<b>Total</b>			<b>39</b>