

<b>MCA103 COMPUTER ORGANIZATION AND ARCHITECTURE</b>				
	L	T	P	Cr
	3	1	2	4.5
<p><b>Course Objective:</b> Focus is on the architecture and organization of the basic computer modules viz control unit, central processing unit, input-output organization and memory unit. Covers basics of computer arithmetic and parallel processing concepts.</p>				
<p><b>Basics of Digital Electronics:</b> Codes, Logic gates, Flip flops, Registers, Counters, Multiplexer, Demultiplexer, Decoder, Encoder.</p>				
<p><b>Register Transfer and Micro operations:</b> Register transfer Language, Register transfer, Bus &amp; memory transfer, Logic micro operations, Shift micro operation.</p>				
<p><b>Basic Computer Organization:</b> Instruction codes, Computer instructions, Timing &amp; control, Instruction Cycles, Memory reference instruction, Input/Output&amp; Interrupts, Complete computer description &amp; design of basic computer.</p>				
<p><b>Control Unit:</b> Hardwired vs. Micro programmed control unit.</p>				
<p><b>Central Processing Unit:</b> General register organization, Stack organization, Instruction format, Data transfer &amp; manipulation, Program control, RISC, CISC.</p>				
<p><b>Computer Arithmetic:</b> Addition &amp; subtraction, Multiplication Algorithms, Division algorithms.</p>				
<p><b>Input-Output Organization:</b> Peripheral devices, I/O interface, Data transfer schemes, Program control, Interrupt, DMA transfer, I/O processor.</p>				
<p><b>Memory Unit:</b> Memory hierarchy, Processor vs. memory speed, High-speed memories, Cache memory, Associative memory, Interleave, Virtual memory, Memory management.</p>				
<p><b>Introduction to Parallel Processing:</b> Pipelining, Characteristics of multiprocessors, Interconnection structures, Interprocessor arbitration, Interprocessor communication &amp; synchronization.</p>				
<p><b>Case Studies:</b> Case studies of some contemporary advanced architecture for processors of families like Intel, AMD, IBM etc./Seminar on State-of-the-art technology.</p>				
<p><b>Lab Work :</b> To implement different programs using ARM processor</p>				
<p><b>Recommended Books</b></p> <ol style="list-style-type: none"> <li>1. Mano, Morris M., Computer System Architectue, Prentice Hall (1992) , 3<sup>rd</sup> ed.</li> <li>2. Hayes, J.P., Computer Architecture and Organization, McGraw Hill (1998), 3<sup>rd</sup>ed.</li> <li>3. Hennessy, J.L., Patterson, D.A, and Goldberg, D., Computer Architecture A Quantitative Approach, Pearson Education Asia (2006), 5<sup>th</sup>ed.</li> </ol>				

4. Leigh, W.E. and Ali, D.L., System Architecture: software and hardware concepts, South Wester Publishing Co. (2000).