



CURRICULUM

Programme		Master of Computer Applications							Year of Regulation				2024-25			
Department		Computer Science & Engineering							Semester				I			
Course Code	Course Name					Pre-Requisite		Credit Structure				Marks Distribution				
								L	T	P	C	INT	MID	END	Total	
CA403	Computer Organization							3	0	0	3	50	50	100	200	
									CO's	Statement				Bloom's Taxonomy		
Course Objectives	COB1: To develop the student's ability to understand the concept of Instruction execution model, instruction set architecture and types, instruction formats and Addressing modes.					Course Outcomes		CA403.1	Students should be able to Understand how different functional units of a digital computer are organized and design, performance enhancement strategies				Understand			
	COB2: To develop the student's ability to understand the concept of control unit design based on hardwired as well as micro-programmed control approach.							CA403.2	Students should be able to Solve the performance related problems of arithmetic logic unit, cache and virtual memory.				Evaluate			
	COB3: To provide the students with some knowledge and analysis skills associated with the design of Arithmetic and Logic unit.							CA403.3	Analyze the performance differences of different mapping techniques of cache memory, different adder circuits of ALU and different page replacement algorithms of virtual memory.				Analyse			
	COB4: To develop the student's ability to understand the concept of memory design, cache memory and its mapping techniques and virtual memory.							CA403.4	Able to analyse Synchronization and I/O mechanism of data transfer.				Analyse			
	COB5: To provide the students with some basic knowledge of I/O mapping and control, interrupt and DMA mechanism.															
Cos	Mapping with Program Outcomes (POs)											Mapping with PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CA403.1	3	1	1					1	1			2		1	3	
CA403.2	3	3	2	2	2			1	1			2	1	1	3	
CA403.3	3	3	3	2	2			2	2			2	2	2	3	
CA403.4	2	2	3		2	2	3		2			1	2	3	2	
CA403	2.75	2.25	2.25	2	2.00	2.00	3	1.33	1.5			1.75	1.67	1.75	2.75	
SYLLABUS																
No.		Content											Hours		Cos	
Overview: (Hrs.: 6)		Block diagram of a computer system											03		CA403.1	
		Instruction execution model.											03		CA403.1	
Processor Organization: (Hrs.: 10)		Instruction set architecture- types, formats, addressing modes											03		CA403.1 & CA403.2	
		Data path organization, Control unit design - Hardwired control, Microprogramming.											04		CA403.1 & CA403.2	
		CISC and RISC architecture, Instruction pipelining.											03		CA403.1 & CA403.2	
Arithmetic and Logic unit: (Hrs.: 9)		Computer arithmetic- Review of addition and subtraction											03		CA403.1, CA403.2 & CA403.3	
		Multiplication- Booth's, Array; Division- Restoring and non-restoring											03		CA403.1 & CA403.2	
		Floating point arithmetic											03		CA403.1 & CA403.2	
Memory Organization: (Hrs.: 10)		Interfacing of memory with processor, Memory hierarchy, Multiple-module memory,											04		CA403.1	
		Cache memory, Virtual memory.											06		CA403.1, CA403.2 & CA403.3	
Input/output Organization: (Hrs.: 7)		Synchronization of data transfer- strobed and handshaking;											03		CA403.4	
		I/O mapping and control- Program controlled, Interrupt driven, DMA, Interrupt and DMA mechanisms.											04		CA403.4	
Total Hours												42				
Essential Readings																
1. Hamacher, Carl, Zvonko Vranesic, and Safwat Zaky. <i>Computer organization</i> . McGraw-Hill, 2002.																
2. Mano, M. Morris. <i>Computer system architecture</i> . Prentice-Hall of India, 2003.																
3. Stallings, William. <i>Computer organization and architecture: designing for performance</i> . Pearson Education India, 2003.																
Supplementary Readings																
1. Hennessy, John L., and David A. Patterson. <i>Computer architecture: a quantitative approach</i> . Elsevier, 2011.																
2. Bryant, Randal E., O'Hallaron David Richard, and O'Hallaron David Richard. <i>Computer systems: a programmer's perspective</i> . Vol. 2. Upper Saddle River: Prentice Hall, 2003.																
3. Ramachandran, Umakishore. <i>Computer systems: An integrated approach to architecture and operating systems</i> . Pearson Education India, 2011.																